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ABSTRACT

This publication provides abstracts of 58 active and 42 completed projects designed to improve emergency medical services for children (EMSC). The projects were funded by the United States Department of Health and Human Services' Maternal and Child Health Bureau, in collaboration with the United States Department of Transportation's National Highway Traffic Safety Administration. Issues addressed by the projects include injury prevention, children's needs in disasters, poison control services, EMS access through out-of-hospital and pre-hospital services and emergency rooms, intensive care, rehabilitation, and reintegration into the community. Abstracts of projects are divided into six sections: (1) projects to support EMS improvements; (2) the EMSC resource network; (3) state system development grants; (4) targeted issue grants; (5) research grants; (6) continuing education grants; and (7) completed projects. Each abstract contains: (1) the name, grantee, director(s), contact information, project number, and project period; (2) the problem addressed; (3) goals and objectives; (4) methodology; in most cases, (5) evaluation; and, in some cases, (6) experience to date. (KDFB)

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EMERGENCY MEDICAL SERVICES FOR CHILDREN

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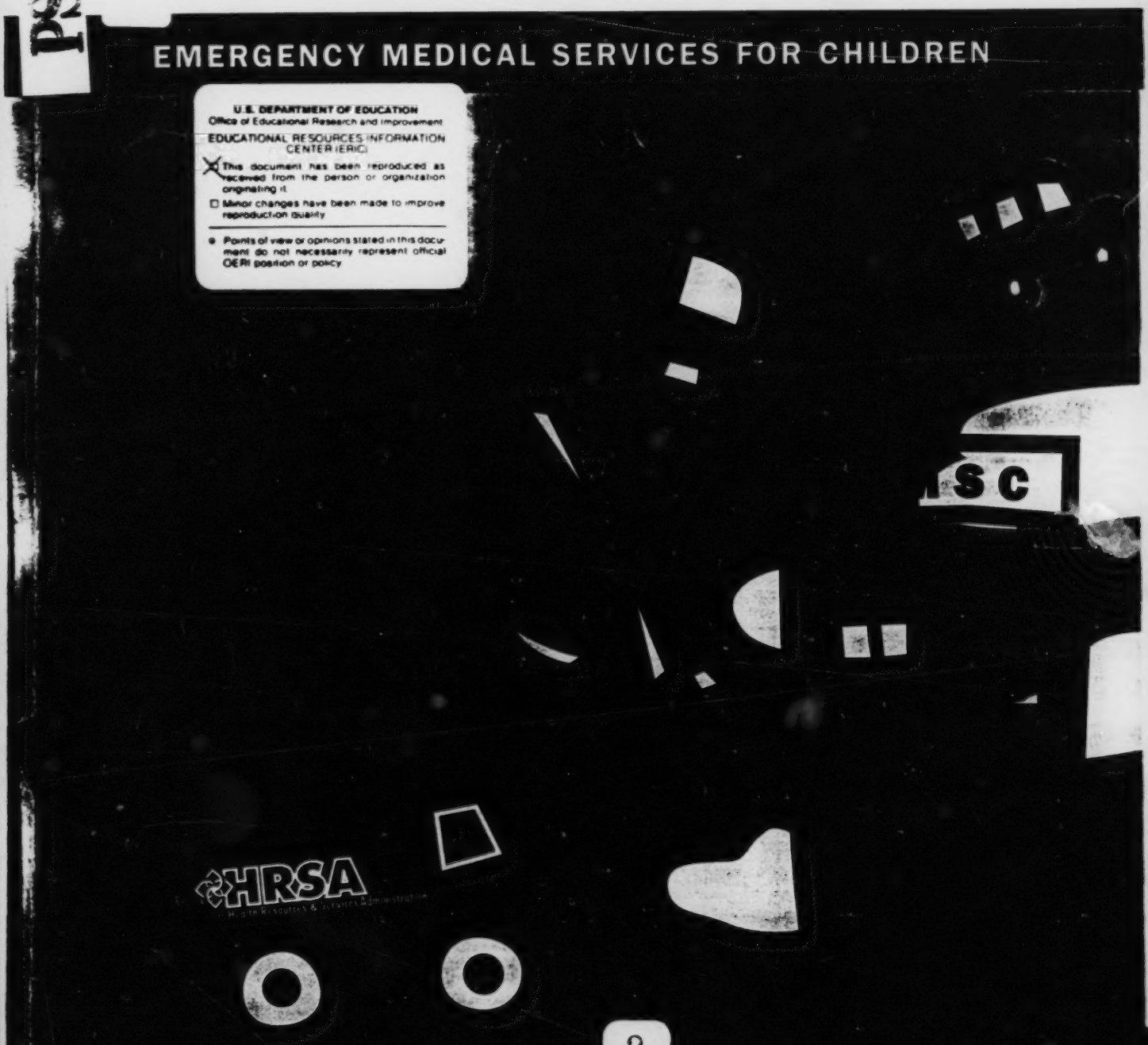

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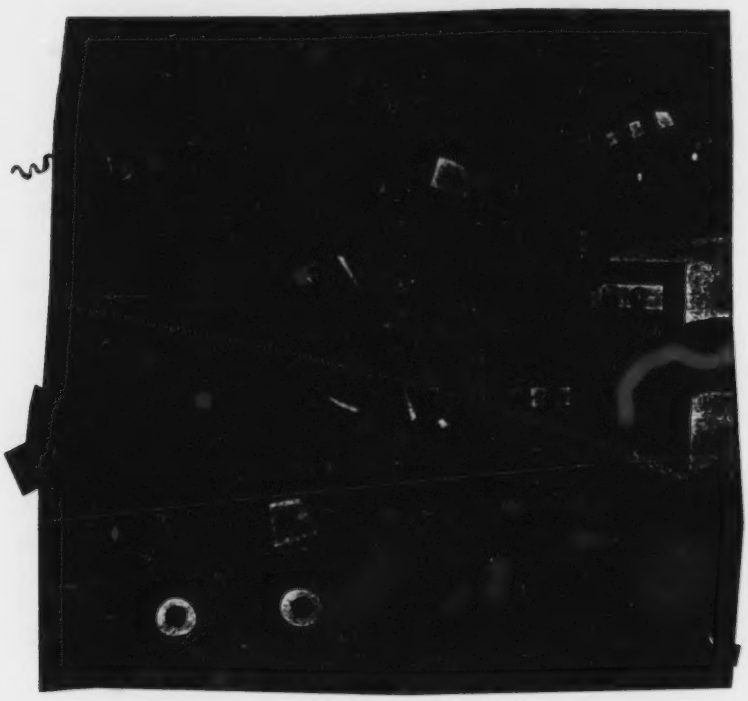
ABSTRACTS OF ACTIVE PROJECTS FY 1996

EMERGENCY MEDICAL SERVICES FOR CHILDREN

Abstracts of Active Projects FY 1996



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Emergency Medical Services for Children

The Need and the Goal

Most people do not realize that advanced, highly organized emergency medical services (EMS) systems are relatively new. We take for granted a network of life-saving resources and technology that entered its early stages of development barely 30 years ago. Even fewer people realize that these EMS systems initially made no allowance for children's unique medical needs—a critical omission that hurt the quality of pediatric emergency care. Upgrading the existing EMS system to provide for children is a complex and continuing challenge. This is true because:

- Children suffer from a different spectrum of diseases and injuries than adults.
- Children have unique physiological responses to illness and injury, and so their treatment demands specific training, equipment, and approaches that aren't always available in a system designed for adults.
- Children's intense emotional responses during emergencies combined with the inability of many young children to describe their symptoms requires caregivers to develop special skills to communicate effectively and to help minimize distress.
- Statistically, fewer emergencies involve children than adults, making it more difficult to maintain treatment skills.
- Prevention and rehabilitation are essential for ensuring a complete system for children.

The need to integrate pediatric emergency care into EMS was first indicated by research in the late 1970s that showed that children had higher mortality and morbidity rates than adults. However, when children had access to a higher level of care, their mortality and morbidity decreased. The ongoing need for and importance of special attention to children was summarized in the 1993 Institute of Medicine report *Emergency Medical Services for Children*.

The Emergency Medical Services for Children (EMSC) program is designed to address the entire continuum of pediatric emergency services, from injury prevention and EMS access through prehospital and emergency department care, intensive care, rehabilitation, and reintegration into the community, while ensuring that the ongoing involvement of the child's primary care provider at each step.

Dedicated efforts by EMSC States over the last decade have led to significant improvements in children's emergency care. More ambulances and emergency departments have pediatric equipment on hand. Many new protocols ensure that children are sent to the medical facilities best able to help them. Extensive training programs in pediatric care have promoted confidence and competence among emergency medical technicians, paramedics, and emergency room nurses and physicians. And more people are working to prevent needless childhood injury. Most important of all, more children's lives are being saved. However, much remains to be accomplished.

This publication describes projects that are currently supported through the EMSC program and briefly notes those projects that have been completed. It documents the scope of efforts to improve pediatric emergency care around the Nation.

The projects described here are funded by the U.S. Department of Health and Human Services, U.S. Public Health Service, Health Resources and Services Administration, Maternal and Child Health Bureau, in collaboration with the U.S. Department of Transportation, National Highway Traffic Safety Administration.

The EMSC Five-Year Plan

In 1995, the Maternal and Child Health Bureau (MCHB) and the National Highway Traffic Safety Administration (NHTSA) published a 5-year plan for EMSC. The plan's objectives are based on recommendations laid out by the Institute of Medicine (IOM) in the 1993 report *Emergency Medical Services for Children*. Staff from MCHB and NHTSA joined with a panel of expert advisors to convert the IOM recommendations into action steps. The resultant draft plan was sent to individuals, groups, and organizations around the country for review and discussion. The draft was revised and the comments incorporated into the plan.

The plan's objectives are to:

A. Include pediatric issues in all aspects of emergency medical services development.

B. Develop broad-based support for improving emergency medical services.

C. Improve and expand pediatric emergency training programs for health professionals.

D. Ensure that prehospital and interhospital pediatric transport meets children's needs.

E. Improve hospital classification and regional system development.

F. Ensure access to emergency medical dispatch services for all children and their families.

G. Ensure universal access to the emergency care system for all children and their families.

H. Expand the availability of injury prevention, first aid, and CPR programs.

I. Include pediatric protocols in medical direction for all EMS agencies.

J. Integrate pediatric components into the development of all trauma systems.

K. Ensure a coordinated approach to EMSC.

L. Institutionalize EMSC within the State EMS system.

M. Improve data collection systems, data analysis methodology, and research to describe and evaluate emergency medical care for children.

Projects to Support EMS Improvements

Joint Projects with the National Highway Traffic Safety Administration (NHTSA)

The Maternal and Child Health Bureau and the National Highway Traffic Safety Administration work cooperatively to enhance the Nation's EMS system. Clearly, children's emergency medical services can only be as good as the overall emergency medical services system. MCHB and NHTSA continued their collaboration with the Federal Emergency Management Agency (FEMA) to support the Make the Right Call Campaign, initiated a new activity with FEMA on disaster preparedness, and co-funded six projects:

Emergency Medical Technician-Intermediate and Emergency Medical Technician-Paramedic: National Standard Curricula and Associated Refresher Courses Revisions . . . DTNH22-95-C-05108

Workshop on Children's Emergencies in Disasters . . . . . OWF 53293

Development and Implementation of National Consensus on Emergency Medical Services Communications: Problems and Remedies DTNH22-94-G-05222

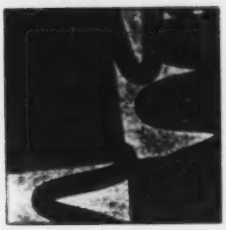
Model Quality Improvement Program for Emergency Medical Services Systems DTNH22-75-C-05107

Emergency Medical Services Agenda for the Future DTNH22-95-G05188

First Responder Training Program Revision DTNH22-94-R-05123

Role of Out-of-Hospital Emergency Medical Services in Primary Injury Prevention 95H03381A0000000

Emergency Medical Services Instructor Training Program: National Standard Curriculum DTNH22-94-C-05008



Emergency Medical Technician-Intermediate and Emergency Medical Technician-Paramedic: National Standard Curricula and Associated Refresher Courses Revisions

Grantee
Center for Emergency Medicine

Project Number DTNH22-95-C-05108

Project Director
Walt Stoy, Ph.D.
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Pittsburgh, PA 15213
(412) 578-3200
(412) 578-3241 fax

Problem

The Emergency Medical Technician-Basic (EMT-B) curriculum has recently been revised, and the new curriculum is radically different in both instructional design and medical content. To ensure linkage and bridging among all curriculums, the Emergency Medical Technician-Intermediate (EMT-I) and Emergency Medical Technician-Paramedic (EMT-P) curriculums must also be revised.

Goals and Objectives

This project will revise the EMT–I and EMT-P standard curriculums and associated refresher courses. These curriculums will also include the new pediatric components that have been integrated into EMT training over the last few years.

Methodology

The curriculums will be developed through formation of several teams: An administrative team, an expert writing panel, a national review team, and a peer review team. Designees from all national groups with an interest in EMS will be involved in the curriculum development by participating in the peer review team. The EMT-P standard curriculum will be revised first, and the EMT-I will be extracted from it.

Workshop on Children's Emergencies in Disasters

Project Number OWF 53293

Project Period 09/21/95–09/22/95

Problem

Health professionals have become increasingly aware of the special needs of children during emergencies in general, but issues surrounding the special health needs of children during disasters need to be identified. Anecdotal evidence suggests that the needs of children during disasters have been inadequately addressed in disaster planning, response, and recovery.

Goals and Objectives

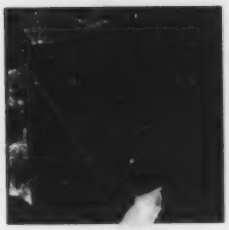
The workshop goal is to identify problems and build consensus on ways to develop the most organized and comprehensive approach to meet children's health needs following disasters. This initial collaboration among professionals representing the Federal, State, and local levels will also generate a process to develop recommendations for strategies and priorities for a subsequent consensus conference.

Methodology

Approximately 12 health professionals representing a range of interests and experience in disasters were invited to participate in this 2-day workshop. The expertise and knowledge of the participants were used to:

1. Identify problems related to children in disasters;
2. Generate ideas on how to prevent, prepare for, respond to, and recover from these problems;
3. Suggest possible strategies and/or approaches for carrying out such ideas; and
4. Develop a short list of priorities for action to better meet the needs of children in disasters.

A report will be generated based on the workshop discussion and will form the basis from which future activities occur as the EMSC program works with its Federal and State partners to implement workshop recommendations.



Development and Implementation of National Consensus on Emergency Medical Services Communications: Problems and Remedies

Grantee
National Association of State Emergency Medical Services Directors

Project Director
Pamela McMaster
1947 Camino Vida Roblo, Suite 202
Carlsbad, CA 92008
(619) 431-7054

Project Number DTNH22-94-G-05222

Project Period 08/01/94–10/31/95

Problem

The efficient response of emergency medical services (EMS) to highway crash victims has proven to be an effective means for reducing fatalities. Over the years, serious problems have arisen in EMS radio communications that have jeopardized the timeliness and efficiency of EMS. Such problems vary within and between States to such an extent that their effective resolution depends upon developing consensus among the States as to priorities, devising a national action plan involving interstate participation, and implementing the action plan through coordinated and concerted efforts among all the States. Because of the scope and nature of the EMS communications problems, resolution of these problems transcends State boundaries and requires national focus.

Goals and Objectives

The goal of the project is to provide the tools to speed the successful implementation of the Federal Communications Commission's new Emergency Medical Radio Service (EMRS) rules and to bring the EMS perspective into national policymaking decisions regarding the use of the Nation's airwaves. Moreover, this project will provide State, regional, and local EMS planning agencies with guidelines to plan appropriate EMS communications systems. The State EMS offices will have a model statute and regulation for certifying emergency medical dispatch centers. Rural communities will have a guide for consolidating public safety answering dispatch functions that will make the adoption of the new technology more cost-effective.

Model Quality Improvement Program for Emergency Medical Services Systems

Grantee
University of Maryland at Baltimore

Project Number DTNH22-75-C-05107

Project Period 09/01/95–11/30/96

Project Director
Pat Gainer
National Study Center for Trauma and Emergency Medical Services
701 West Pratt Street, #1
Baltimore, MD 21201
(410) 328-4257

Problem

A recent evaluation of the National Highway Traffic Safety Administration Emergency Medical Services (EMS) Technical Assessment program revealed that nearly 90 percent of the States that had participated in the program did not have a comprehensive, medically directed, statewide quality improvement program in place at the time of their assessments. In addition, none of the States that subsequently received a recommendation to establish such a program were able to do so when evaluated 1 year later. Without a quality improvement program in place, States do not have the needed information to make effective decisions regarding EMS system operations, patient care, and resource utilization. However, no models currently exist that States may adopt or modify in designing a quality improvement system, and many States lack the knowledge, skills, and resources necessary to plan such programs.

Goals and Objectives

This project will develop a Model Statewide EMS Quality Improvement Program to enable a State to monitor the effectiveness of its statewide EMS system and to evaluate the EMS system against State goals and standards. It will also help a State to identify needed improvements in system operations and patient care, as well as to identify those areas where highway safety dollars can be most effectively diverted.

Emergency Medical Services Agenda for the Future

Grantee
National Association of Emergency Medical Services Physicians

Project Number DTNH22-95-G05188

Project Period 06/01/95–10/01/95

Project Director
Kathleen Stage-Kern
230 McKee Place, Suite 500
Pittsburgh, PA 15213
(412) 578-3222
(412) 578-3241 fax

Problem

Not since 1966, with the publication of *Accidental Death and Disability: The Neglected Diseases of Modern Society*, has the emergency medical services (EMS) community reviewed the appropriate attributes of EMS systems. The health care system has changed dramatically in the intervening years, as has EMS.

Goals and Objectives

This project aims to develop a national EMS agenda for the future that takes account of shifting resources, newly developed technology, and changes to the way in which health care services are rendered and compensated.

Methodology

An expert group will be brought together to develop a draft report that will be circulated to the entire EMS community for review and critique. The writing group will then revise the initial document. A national consensus conference, which will further refine the document, will be held. Finally, the contractor will revise the document based on the critique from the conference.

First Responder Training Program Revision

Grantee
Center for Emergency Medicine

Project Number DTNH22-94-R-05123

Project Period 10/01/94–09/30/95

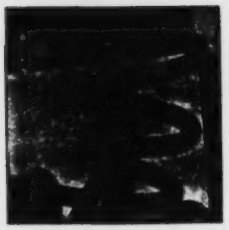
Project Director
Walt Stoy, Ph.D.
230 McKee Place, Suite 500
Pittsburgh, PA 15213
(412) 578-3200
(412) 578-3241 fax

Problem

The current First Responder curriculum is no longer compatible with the Emergency Medical Technician-Basic (EMT-B) curriculum, due to changes in the EMT-B course. These two curricula must be consistent since one builds on the other.

Methodology

Form a Curriculum Development Group to guide and advise the contractor in fulfilling the project objectives. Develop the curriculum, pilot test it, and produce the final, revised curriculum.



Role of Out-of-Hospital Emergency Medical Services in Primary Injury Prevention

Grantee
National Association of Emergency Medical Services Physicians

Project Number 95H03381A0000000

Project Period 06/01/95–09/30/95

Project Director
Kathleen Stage-Kern
230 McKee Place, Suite 500
Pittsburgh, PA 15213
(412) 978-3222
(412) 578-3241 fax

Problem

The National Emergency Medical Services Education and Practice Blueprint was developed in 1993 to provide national consensus on a framework for the development of emergency medical services (EMS) training, education, and policies. A blueprint task force developed a draft document that was validated by peer review and a consensus panel. A final version of the blueprint was then sent to the EMS community for implementation.

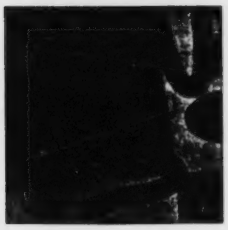
The blueprint focuses solely on knowledge and skills proficiency for the clinical content of EMS training. There is no national consensus on the role of the EMS provider in injury prevention.

Goals and Objectives

The project goal is to convene a consensus workshop of representatives from the major EMS national organizations to reach agreement on the criteria for an injury prevention supplement to the blueprint.

Methodology

The National Association of Emergency Medical Service Physicians will develop a draft document addressing injury prevention roles of prehospital providers and circulate that document to selected reviewers. The document will be revised as appropriate prior to the consensus workshop. At the workshop, the document will be discussed and the participants will reach agreement on its content and format. Following the workshop, the supplement will be sent to major EMS national organizations for endorsement.



Emergency Medical Services Instructor Training Program: National Standard Curriculum

Grantee
Analysis and Technology, Inc.

Project Number DTNH-22-94-C-05008

Project Period 10/31/94–12/31/95

Project Director
Jane Davis, Ph.D.
7926 Jones Branch Drive, Suite 600
McLean, VA 22102
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(703) 827-8721 fax

Problem

The National Highway Traffic Safety Administration produced the first edition of its *Emergency Medical Service Instructor Training Program* in 1986. However, the courses that emergency medical technicians (EMTs) take have changed dramatically over the last 9 years. Thus, the instructor training program needs revision.

Goals and Objectives

This project is designed to revise the instructor training program. The new curriculum will focus on strategies for teaching assessment-based curriculums and will ensure that modern curriculum development and adult education principles are incorporated. This new curriculum will also include the new pediatric components that have been integrated into EMT training over the last few years.

Methodology

The contractor brought together a curriculum development group comprising representatives from the EMS industry. This group will revise the curriculum with special attention to making it user friendly. One member of the team is an instructural design specialist who will help with issues of adult learners. The revised curriculum will be pilot tested in two locations and appropriate revisions will be made with a final review by the curriculum development group.

Contracts

The EMSC program occasionally awards contracts to meet specific, targeted needs. Four such contracts were awarded in FY 1996:

An Analysis of Potential Economies of Scale in Poison Control Centers: Phase I 240-95-0100
Awarded to George Washington University

Evaluating the Effect of Federal Demonstration Funds on State Emergency Medical Services for Children 282-92-0040
Awarded to George Washington University

Fire Fighter Training in the Emergency Medical Care of Children 103HR950893P000-000
Awarded to the International Association of Fire Fighters

Government Financial Options to Preserve and Expand Poison Control Centers 103HR940813P000-000
Awarded to National Public Services Research Institute

An Analysis of Potential Economies of Scale in Poison Control Centers: Phase I

Grantee
George Washington University

Project Number 240-95-0100

Project Period 02/07/95–10/13/95

Project Director
Ann Zuvekas, Ph.D.
Center for Health Policy Research
2021 K Street, N.W.
Suite 800
Washington, DC 20052
(202) 298-6922

Problem

In the United States, there now exist some 100 poison control centers, down from their peak of 600 in the 1970s, mostly because of funding cuts. Most communities are served by about 50 large regional centers, whose funding is still in danger.

Currently, no consensus exists as to the exact functions that the centers should perform, whether consolidation into fewer but geographically broader centers would be beneficial, or how many centers are needed. Solutions to the current crisis include intensive efforts to sustain or enhance funding of existing centers, or, alternatively, movement towards fewer, more centralized centers.

Some 65 to 70 percent of calls to poison control centers deal with ingestions by children and adolescents. Research has clearly shown that more children are treated in emergency departments when the centers close; moreover, the effects of the ingestions are often more serious as well as more costly due to delays in treatment.

Goals and Objectives

The project goal is to assess the best way to deliver needed poison control services. Two sequential research phases will:

1. Describe the functions that poison control centers perform and the services they deliver;
2. Assess unmet needs for poison control services;
3. Estimate which current and needed services would pass a cost-effectiveness test; and
4. Examine the relative cost-effectiveness of alternative national and regional centralization schemes for poison control service delivery. This delivery order is for the first study phase. It uses existing data, modestly supplemented by new data collection. It also develops a phase 2 research design that addresses issues requiring more intensive data collection.

Methodology

The project will describe the current system of providing poison control services in the United States, including linkages with the emergency medical services system. Existing data will be supplemented by telephone interviews with up to eight poison control centers.

The project will categorize current poison control center functions (e.g., victim treatment and referral, provider consultation, provider training, proactive prevention). This activity will be informed by a literature review and site visits to six poison control centers.

The project will identify data available to estimate the value (or quantifiable benefits) of each function and the cost of providing each function. The cost analysis ultimately will need to distinguish costs of regional versus national approaches where both are feasible. This task largely involves a review of published and unpublished literature. Current knowledge on the cost-effectiveness and centralization issues will be summarized.

The project will identify those functions whose cost-effectiveness and potential for centralization could be estimated by phase 2 data collection and will develop a detailed workplan for phase 2.

Evaluating the Effect of Federal Demonstration Funds on State Emergency Medical Services for Children

Grantee
George Washington University

Project Number 282-92-0040

Project Period 10/01/94–09/29/95

Project Director
Michelle Solloway, Ph.D.
Center for Health Policy Research
2021 K Street, N.W.
Suite 800
Washington, DC 20006
(202) 296-6922

Problem

Previous evaluations of emergency medical services (EMS) systems or of the emergency medical services for children (EMSC) program have not addressed the lasting impact of EMSC funding in particular grantee States. There has been no systematic evaluation to learn what resources exist in grantee States, what lasting changes have resulted from Federal funding, what characteristics lead to successful institutionalization, and what obstacles prevent such institutionalization of EMSC into State EMS systems.

Goals and Objectives

The project goal is to determine the lasting impact of the federally funded EMSC demonstration/implementation program in establishing, improving, and expanding the pediatric capability of State and regional EMS systems in an enduring fashion after Federal funding has expired. The project will identify those attributes associated with successful institutionalization of EMSC into State EMS systems, and characterize the obstacles to such institutionalization.

Methodology

This project uses a quasi-experimental research design to evaluate the effectiveness of seven demonstration grants in creating sustainable EMSC programs. The design will focus on an assessment of each State EMSC program prior to, during, and after Federal funding was provided, with interstate comparisons along a variety of dimensions. The design will contain both process and outcome evaluation strategies and involves a variety of data collection methods. The project will also assess structural changes, process changes, and outcome changes in areas specifically related to grant activities in the provision of emergency care of children.

Key personnel involved in establishing and implementing the programs will be interviewed; archival and background documents will be examined; new laws and regulations as well as other formal efforts to institutionalize EMSC will be collected and analyzed; a survey incorporating data elements will be administered to program directors and managers; and site visits will be made to the State MCH and EMS offices.

Fire Fighter Training in the Emergency Medical Care of Children

Grantee
International Association
of Fire Fighters

Project Number 103HR950893P000-000

Project Period 07/03/95–12/11/95

Project Director
Lori Moore
1750 New York Avenue, N.W.
Washington, DC 20006
(202) 737-8484

Problem

The Emergency Medical Services for Children (EMSC) program has not addressed first responder training for firefighters, even though they are often involved initially in a variety of situations in which children are injured. The 1993 Institute of Medicine report on EMSC recommended additional training for the first responder, including firefighters.

Goals and Objectives

This project will begin to address the deficiencies in firefighter training by identifying the missing components in the training that firefighters typically receive and by determining learning objectives prior to development of curriculum materials.

Methodology

This project will conduct telephone interviews with firefighter authorities, including chiefs, training officers, union officials, and medical directors to identify training needs. In addition, curriculum materials on training housed at the National EMSC Resource Alliance will be reviewed for relevance to firefighter needs. Finally, the project will identify and list terminal and enabling learning objectives for an EMSC curriculum appropriate for firefighters.

Government Financial Options to Preserve and Expand Poison Control Centers

Grantee
National Public Services
Research Institute

Project Number 103HR940813P000-000

Project Period 7/15/94–6/30/95

Project Director
Ted Miller, Ph.D.
8201 Corporate Drive, Suite 220
Landover, MD 20785
(301) 731-9891
(301) 731-6649 fax

Problem

Poisoning is a major health care problem of children. Poison control centers (PCCs) are first-line responders to poisoning. They improve the timeliness and quality of treatment. They also triage poisoning care, allowing parents to treat poisonings at home that otherwise would tax the emergency medical services system.

Despite their proven cost effectiveness, lack of funds recently has forced several PCCs to curtail services and threatens others. The current system for funding PCCs is in crisis. A range of conflicting suggestions have been made about how to solve the crisis and about how poison control centers should be funded under health care reform.

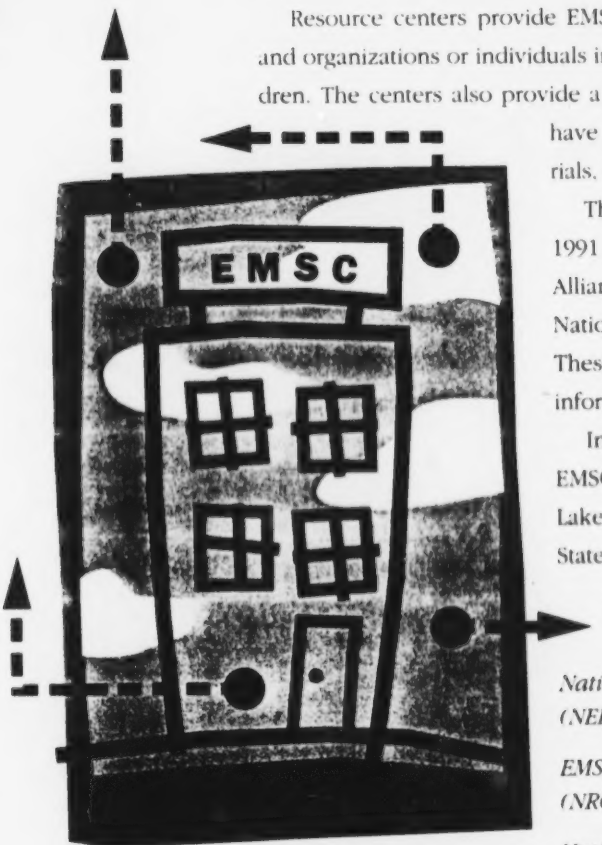
Goals and Objectives

This project will provide analytic support to the Poison Control Centers Leadership Group (PCCLG), organized by the Maternal and Child Health Bureau, the National Highway Traffic Safety Administration, the Centers for Disease Control and Prevention, and the U.S. Consumer Product Safety Commission, as it seeks consensus on the appropriate Federal role in funding PCCs. In particular, the project will summarize current funding mechanisms of PCCs, identify alternative mechanisms, analyze the mechanisms, and prepare a comprehensive report.

Methodology

A literature survey will be undertaken related to operational costs and benefits of PCCs. Using a 1993 survey by the American Association of Poison Control Centers, an analysis of PCC funding mechanisms will be identified and analyzed. The analysis will consist of identification of the pros and cons of each alternative and an estimate of the Federal and State costs of mechanisms that appear viable.

The EMSC Resource Network



Resource centers provide EMSC information and technical assistance to States and organizations or individuals interested in the care of acutely ill and injured children. The centers also provide a means for States to share the many lessons they have learned. By disseminating information and materials, the centers prevent duplication of efforts.

The EMSC Resource Network was established in 1991 with two branches: the National EMSC Resource Alliance (NERA) in Los Angeles, CA, and the EMSC National Resource Center (NRC) in Washington, DC. These centers provide different but complementary information and assistance.

In 1995, a third center was added: The National EMSC Data Analysis Resource Center, located in Salt Lake City, UT. This center was established to assist States in using and analyzing data to better identify gaps in services and to assess outcomes in pediatric emergency care.

National EMSC Resource Alliance (NERA) (CA) MCU-064005

EMSC National Resource Center (NRC) (DC) MCU-114002

National Emergency Medical Services for Children Data Analysis Resource Center (NEDARC) (UT) MCH-494003

EMSC Resource Network Advisory Board

In 1995, a national advisory board was established for the EMSC Resource Network. The members of the board are:

Sharon Avery
Director, Rural Health Care Center
California Health Care Association
1201 K Street, Suite 800
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Bob Bailey
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P.O. Box 29530
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5250 Southwest 84th Street
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Ohio Department of Health
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Martin Weaver, M.D., Ed.M.
Physical Medicine and Rehabilitation
Coopers Hospital
88 Olympia Lane
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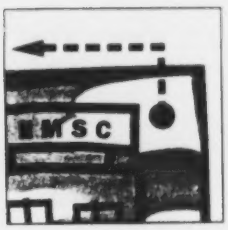
Janice West
National Congress of Parent-Teacher Associations
5572 Rebecca Court
Stone Mountain, GA 30087

Casie Williams, R.N., M.Ed.
Director, Nursing Education
Alaska Native Medical Center
255 Gambell Street
Anchorage, AK 99501



National EMSC Resource Alliance (NERA)

Grantee
Research and Education Institute, Inc.

Project Number MCU-064003

Project Period 10/01/91–09/30/96

Contact Person Deborah Henderson, R.N., M.A.

Project Director
James S. Seidel, M.D., Ph.D.
Deborah Henderson, R.N., M.A.
Harbor-UCLA Medical Center
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Torrance, CA 90502
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Problem

Since the establishment of the National EMSC Resource Alliance (NERA) as a resource center for emergency medical services for children (EMSC), there has been a continuing increase in requests for information about programs and products designed to improve the care of critically ill and injured pediatric patients. In the past 3 years, NERA has provided materials and consultation on various aspects of pediatric emergency care to professionals, agencies, organizations, and individuals interested in improving pediatric emergency care and integrating EMSC into emergency medical services (EMS) systems. This service has been provided to all States and territories and to many foreign countries. NERA is an accessible, convenient, and reliable resource for obtaining materials developed by EMSC grants and EMSC consultation. As more States become interested in developing EMSC within their EMS systems, the need for this resource center will continue to increase. In addition, States that have completed EMSC projects are returning for additional consultation in developing specific areas of EMSC.

Goals and Objectives

NERA is a collaborative effort of organizations, institutions, and individuals dedicated to improving the health care of infants, children, and young adults. NERA's overall goal is to serve as a resource for States and localities wanting to improve EMSC capacity within EMS systems.

The objectives are to:

1. Provide technical assistance to EMS and MCH agencies in developing manageable approaches to EMSC implementation;
2. Provide technical assistance to funded grantees in all aspects of project development;
3. Conduct outreach and provide intensive technical assistance to unfunded and previously funded States;
4. Analyze special issues and develop programmatic approaches to address EMSC needs;
5. Disseminate information on EMSC in ways identified jointly with the project officer at the Maternal and Child Health Bureau (MCHB);
6. Organize the annual EMSC Project Meeting;
7. Publish *EMSC News*;

8. Maintain the EMSC Computer Bulletin Board;
9. Conduct clearinghouse activities;
10. Maintain liaison with the National Resource Center (NRC) in Washington, DC, and with MCHB; and
11. Promote EMSC regionally and nationally.

Methodology

To complete these objectives, NERA will be working with key individuals from MCHB, the National Highway Traffic Safety Administration (NHTSA), NRC, and EMSC grant projects, and with representatives from many other organizations. Subcontractors will work with NERA to provide these services: (1) The American Academy of Pediatrics assists with the Technical Advisory Board and in disseminating EMSC information through national meetings and committees. (2) The Los Angeles Pediatric Society coordinates activities targeting primary care providers. (3) Symposia Medicus will coordinate two conferences—the EMSC Project Meeting and the Leadership Conference

NERA activities are coordinated with other State and local agencies, including the California Department of Health Services (DHS), EMS Authority, and the Los Angeles County DHS, EMS Division. In FY 1995 we will work more closely with the NRC in Washington, DC, in providing joint consultation in specific areas of expertise. To keep others abreast of NERA activities, EMSC News and other EMSC outreach products are sent on a quarterly basis to State and regional MCH directors and the California EMS Authority. NERA also coordinates and monitors a computerized bulletin board service on MCH-Net for communication with grantees and other interested parties.

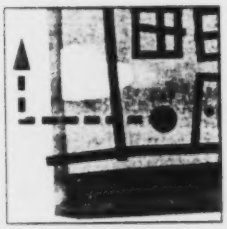
Evaluation

NERA evaluates all grant activities on an ongoing basis. Descriptive data are collected on time spent on NERA activities, on requests, and on resources provided. This information is used to ensure effective networking and outreach to all areas. EMSC grant products are evaluated and described in the catalog data base. Regional conferences and the EMSC National Conference are evaluated by attendees via surveys and questionnaires. All evaluative information is used to improve services continuously.

Experience to Date

There has been an increasing demand for NERA's services over the last 3 years. Requests for EMSC products have increased 36 percent overall, and requests for commonly requested products range from an increase of 74 percent (EMSC brochures) to an increase of 349 percent (*EMSC News*). The EMSC National Conference has become an important yearly event for grantees, with opportunities to network and to develop regional plans. In FY 1995, NERA produced two handbooks: The *Internet Handbook* and *Copyright Issues*, which were provided to all grantees. A supplement to the *EMSC Resource Catalogue* was developed, to be integrated into the larger catalog in FY 1996. Although the demand for resources has soared and the amount of staff time spent consulting with grantees about EMSC products has increased, the amount of time spent collating and mailing has decreased, representing increased efficiency in processing requests.

We anticipate ongoing interest in developing all of the various aspects of EMSC, and collaborating with Federal, State, regional, and local agencies and individuals interested in improving pediatric emergency care.



EMSC National Resource Center

Grantee
George Washington University

Project Number MCU-114002

Project Period 10/01/91–09/30/96

Project Director
Jane Ball, R.N., Dr.P.H.
Department of Pediatrics
Children's Hospital
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Problem

Since 1985, 41 States have received demonstration or implementation grants for emergency medical services for children (EMSC). These grants address specific needs and deficiencies in the areas of injury prevention, data collection and research, public and professional education, development of pediatric care standards, designation of pediatric referral centers, and issues related to long-term disability and impact after a disability. Unfortunately, many EMSC grantees have not achieved success in sustaining a coordinated program effort after the Federal funding has ended. Planning for long-term survival of the program within States is essential to maintain the advances in pediatric emergency care systems. New EMSC grantees need technical assistance in coalition building and public policy to mobilize community and financial support for long-term survival of the EMSC program. Most individuals and organizations at local, State, and national levels are not aware of the pediatric emergency care deficiencies and needs.

Goals and Objectives

1. Provide technical assistance to States in developing a manageable approach to ESMC implementation.

   Objectives:

   a. Assist emergency medical services (EMS) and maternal and child health (MCH) agencies in identifying and establishing linkages with other agencies at the State, regional, and Federal levels interested in EMSC-related issues;

   b. Assist EMSC projects in establishing at least one local or State coalition;

   c. Provide technical assistance in program development to EMSC projects with grants in the areas of planning, State systems, and State systems enhancement;

   d. Increase the number of public policy advocates for EMSC at the State and national levels;

   e. Regularly disseminate information about and foster involvement in public policy activities among EMSC projects; and

f. Assist EMSC State grantees to develop plans for continued activities after Federal funding ends.

2. Provide technical assistance to EMSC grantees in specific areas along the EMSC continuum of care.

   Objectives:

   a. Provide technical assistance to EMSC grantees—particularly those in their first and second year of funding—regarding program planning, implementation, and evaluation in the area of injury prevention; and

   b. Assist each EMSC grantee in identifying and implementing components and strategies related to rehabilitation of children with special health needs (CSHN).

3. Disseminate information on EMSC issues and needs to the public, professional organizations, and lay organizations.

   Objective: Develop a public education and information campaign about EMSC.

Methodology

Project activities include: (1) Establishing contacts with representatives of key agencies and organizations; (2) providing States with technical assistance in areas of policy, funding, coalition building, CSHN, and injury prevention; (3) collaborating with NERA on technical assistance to EMSC projects; (4) managing a computerized data base; (5) monitoring EMSC legislation and disseminating *ON CALL with Public Policy*; (6) developing the EMSC public information and education campaign; (7) disseminating grants alerts; and (8) establishing an advisory board on issues related to CSHN.

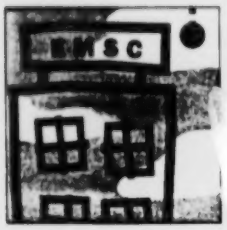
At the NRC, efforts will be made to facilitate coordination among EMS, MCH, and other appropriate agencies at the Federal, State, and local levels. In addition, contacts with members of voluntary and professional organizations will be coordinated. At the national level, the NRC will strive to improve public awareness and increase visibility for EMSC within national organizations and agencies. The NRC will also coordinate efforts with NERA to achieve a unified approach to assisting EMSC projects and to increasing the visibility of EMSC.

Evaluation

Evaluation will reflect the number of consultations provided in the areas of coalition building, project startup, public policy, funding, injury prevention, and rehabilitation. Process evaluation will also reflect the developmental stages of EMSC State and/or local coalitions and the number of national organizations that become involved with EMSC.

Experience to Date

The NRC has provided technical assistance to EMSC projects in the areas of coalition building, public policy, funding, and injury prevention for 4 years. Staff at the NRC have conducted workshops on these topics at State, regional, and national meetings. Relationships are now established with approximately 64 national organizations and Federal agencies. Through this project, *EMSC—Rx for a Community Approach* was developed and disseminated to all EMSC projects. The NRC has also disseminated a public policy newsletter, grants alerts, injury prevention updates, and information regarding organizations interested in EMSC-related issues.



National Emergency Medical Services for Children Data Analysis Resource Center (NEDARC)

Grantee
University of Utah

Project Number MCH-494003

Project Period 10/01/95–09/30/97

Project Director
J. Michael Dean, M.D.
School of Medicine
309 Park Building
Salt Lake City, UT 84112
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(801) 588-2380 fax

Problem

On the systemwide level in Connecticut, few comprehensive emergency medical services for children (EMSC) programs have been developed. Emergency medical services (EMS) capabilities that have been enhanced are the result of local efforts. This lack of coordination of efforts creates an imbalance in the level of service available to pediatric patients throughout the State. Historically, EMS capabilities for pediatric patients have not been specifically targeted for enhancement but, rather, have been incorporated into general improvements of the overall EMS system. This approach has ignored the fact that children are more than "little adults"; they are, in fact, a special population with unique EMS needs

Goals and Objectives

The University of Utah School of Medicine will establish the National EMSC Data Analysis Resource Center (NEDARC) to provide technical assistance with data management and analysis.

The objectives are to:

1. Identify relevant data sets that are currently available or under development in each of the States, including prehospital data sets, hospital files, and trauma registries;
2. Identify State and other EMS agencies that have adopted the uniform prehospital EMS data definitions developed in the August 1993 consensus conference sponsored by the National Highway Traffic Safety Administration and eight other Federal agencies;
3. Provide technical assistance to State EMS agencies, State Maternal and Child Health Bureaus, and other agencies in evaluating EMS and EMSC by using relevant data sets to generate informative reports;
4. Provide technical assistance to State EMS agencies, State Maternal and Child Health Bureaus, and other agencies in data management and linkage related to EMSC with particular emphasis on technical assistance for probabilistic linkage technology;

5. Provide wide availability of and technical assistance for specific and sophisticated statistical analyses on EMSC issues; and
6. Collaborate with national groups, including Federal agencies, in national data development planning, to ensure inclusion of appropriate pediatric data elements.

Methodology

The Connecticut Department of Public Health and Addiction Services (DPHAS), through its Office of Emergency Medical Services (OEMS), will be responsible for administering this project. The director of OEMS reports directly to the deputy commissioner of operations for DPHAS. The OEMS is statutorily established within DPHAS for the purposes of licensing and certifying emergency medical services (EMS) personnel and provider organizations, overseeing and inspecting EMS equipment and facilities, setting rates, and developing the State's EMS programs.

Through this project the State will, for the first time, have an individual whose sole responsibility and focus will be the development of a statewide EMSC system. This person will work closely with the Pediatric Committee of the commissioner's EMS Advisory Board in all phases of the project.

The needs assessment will be based on data collection and analysis. Existing data will be obtained through the Connecticut Hospital Information Management Exchange data base of the Connecticut Hospital Research Education Foundation. For areas of concern in which current data are not available, survey instruments will be prepared and distributed to applicable elements of the EMS system. Analysis will determine statistically significant findings for inclusion in the needs assessment report. Survey targets will include prehospital and hospital personnel and organizations, consumers, community-based health care providers, pediatric specialists, and school nurses.

Problems will be identified through analysis of the data by the Pediatric Committee, consulting epidemiologists, and DPHAS. Prioritization of problems will be based on (1) short-term efforts to augment existing resources and impact the issues affecting the largest pediatric populations, and (2) long-term efforts to develop new capabilities and target issues affecting specific subgroups of the pediatric population.

Creation of the 5-year EMSC plan will be based on the needs assessment, problem identification, and prioritization. The plan will be subject to review and approval by the Pediatric Committee, the EMS Advisory Board, and the commissioner. The Funding Committee of the Advisory Board will explore funding sources through the State legislature, local and Federal agencies, and private grantors.

Evaluation

The submitted schedule of events will be used to track project activities. Staff evaluation will be based on completion of objectives in a timely fashion. Contracting for an individual with demonstrated expertise in data collection and analysis will ensure that appropriate scientific methodologies are used to develop survey instruments and identify statistically significant information derived from this investigation.

The major deliverables in the project are the needs assessment report and the 5-year EMSC plan. These products will be reviewed and approved by the commissioner's EMS Advisory Board, which has expertise in all aspects of EMS. The final EMSC plan will receive public comment and be approved by the commissioner of DPHAS.

State System Development Grants

Planning Grants, Implementation Grants, and System Enhancement Grants

The EMSC program is designed to enhance the pediatric capability of EMS systems originally designed primarily for adults; it does not promote the development of a separate EMS system for children.

EMSC State system development grants have been funded since 1985. The earliest projects developed models for integrating emergency medical services for children into existing EMS systems. Today, there is a much reduced need to demonstrate new models, but there remains a need to implement what has been learned. This is the intent of the State system development grants.

There are now three categories of State system development grants: Planning, implementation, and enhancement.

Planning Grants

Planning grants are designed to enable States that have never had an implementation grant to assess needs and develop strategies to begin to address those needs. Two new awards were made in FY 1996, bringing to six the number of States and territories that have received this type of grant.

Implementation Grants

Implementation grants are used to integrate research-based knowledge and state-of-the-art systems development approaches into existing State EMS systems. Three

new implementation grants were awarded in FY 1996, bringing the total number of such grants to 41 during the life of the program.

System Enhancement Grants

System enhancement grants are designed to enable States that have already begun to improve pediatric emergency medical services to initiate those activities that represent the next logical step to take. These grantees have demonstrated an effectively functioning pediatric EMS presence and a commitment to continue the incorporation of EMSC activities into the State EMS system. In FY 1996, 6 new awards were made, bringing to 14 the total awards in this category.

Currently funded State System Development Projects are as follows:

Planning Grants

Emergency Medical Services for Children Planning Grant (MP) MCH-694001

Emergency Medical Services for Children (CT) MCH-094001

Emergency Medical Services for Children (IA) MCH-194001

Grant Proposal to Develop a Plan to Improve EMSC in Puerto Rico (PR) MCH-434001

Implementation Grants

GEMS-C: Georgia Emergency Medical Services for Children (GA) . . .MCH-134001

Illinois Emergency Medical Services for Children Implementation Plan (IL) MCH-174001

Improving Emergency Medical Services for Children in Massachusetts (MA) MCH-254001

Addressing the Emergency Medical Needs of Children in Minnesota (MN) . . . . . .MCH 274001

A Montana EMSC Data, Injury Prevention, and Training Program (MT) MCH-304001

Emergency Medical Services for Children in Pennsylvania (PA) MCH-424001

Rhode Island Emergency Medical Services for Children Program (RI) MCH-444001

Regionalization of Care for Pediatric Patients (SC) MCH-454001

Emergency Medical Services for Children (SD) MCH-464001

Tennessee EMSC State Systems Implementation Grant (TN) MCH-474001

Tri-State Appalachian Alliance for EMSC (WV) MCH-544001

Wyoming EMSC Project: Implementation Phase (WY) MCH-564001

System Enhancement Grants

Emergency Medical Services for Children Targeted Injury Prevention (AK) MCH-024002

Arizona EMSC Enhancement Project (AZ) MCH-044002

Emergency Medical Services for Children System Enhancements (HI) MCH-154002

Maryland System Enhancement for EMSC Programs (MD) MCH-244002

Michigan's Pediatric Emergency Development System (M-PEDS) (MI) MCH-264002

Southwestern Illinois-St. Louis (SISL) Bistate Regional EMSC Project (MO) MCH-294003

Nevada EMSC State System Enhancement Grant (NV) MCH-324002

New Hampshire Emergency Medical Services for Children Enhancement (NH) MCH-334002

North Carolina Emergency Medical Services for Children Enhancement Project (NC) MCH-374002

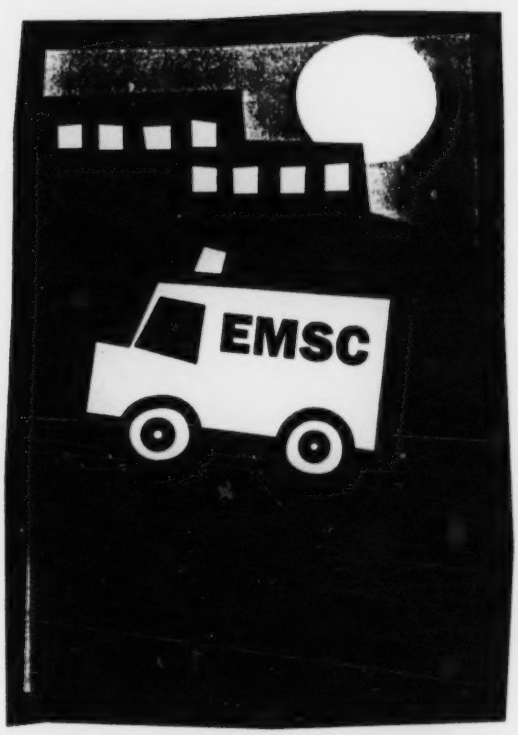
Enhancement of the State of Ohio Emergency Medical Services for Children System (OH) MCH-394002

Enhancing Oklahoma's Emergency Medical System to Care for Pediatric Patients (OK) MCH-404002

Texas Emergency Medical Services for Children Enhancement Project (TX) MCH-484002

Vermont Emergency Medical Services for Children System Enhancement Project (VT) MCH-504002

Emergency Medical Services for Children (EMSC) Enhancement Grant for Poison Prevention (WI) MCH-554002



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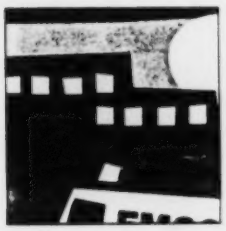


Emergency Medical Services for Children Planning Grant

Grantee
Commonwealth of the Northern Mariana Islands Department of Public Safety

Project Director
Jerry Allison
Civic Center
Saipan, MP 96950
(670) 234-6505

Project Number MCH-694001

Project Period 10/01/95–09/30/96

Contact Person Jose M. Castro

Problem

The Commonwealth of the Northern Mariana Islands (CNMI) is composed of a range of ethnic minorities. High populations of persons continue to migrate into CNMI from other Micronesian jurisdictions and there continues to be a high influx of nonresident contract worker populations from Asia (particularly the Philippines). With the rapidly increasing populations come increased violence, crime, vehicular accidents, and other potentially life-threatening situations. CNMI also has an international airport that serves tourists and others from all over Asia, Micronesia, and the United States. As the number of flights in and out of Saipan increase, so do the chances of a major airline disaster. Further, the pediatric population is overtaking the adult and elderly populations.

CNMI lacks an emergency medical services system that ensures timely access to multilevel prehospital care. There are no pediatric-specific or trauma center hospitals. The Commonwealth Health Center on Saipan is the sole deliverer of comprehensive health care in CNMI. The current EMS system is staffed by persons trained in basic life support. There are no licensed advanced level providers or programs for advanced level training in this region. The exploding population and the concomitant burden on EMS hampers delivery of adequate prehospital services for adults, adolescents, children, and children with special health needs (CSHN). This has resulted in an increase in deaths and long- and short-term disabilities that could have been prevented through appropriate assessment and care of life-threatening emergencies that reduce the delay in this care and improve the transfer capabilities to higher levels of care.

Goals and Objectives

The project goal is to extend emergency medical services and trauma systems linking prehospital, hospital, and rehabilitation services to prevent death and long-term disability.

The impact objective is to reduce, by October 1, 1998, morbidity and mortality of infants, children, adolescents, and CSHN due to intentional and unin-

tentional injuries and illnesses linked to inadequate care from delays in access to properly trained persons and equipment for providing emergency care.

The process objective is to determine, by October 1, 1996, the baseline for emergency medical care needs in CNMI and the CNMI EMS system, specifically addressing the pediatric populations.

Methodology

This project will determine the most culturally appropriate methods to improve access to health care for pediatric target groups by developing mechanisms to reduce language barriers and educate adults as to the pediatric services available, how to more quickly access the system and how they may be more involved (by learning to provide services themselves within their subpopulations). As CNMI is at risk for natural disasters (typhoons and earthquakes) year round, the project will help prepare staff and the community to deal with emergencies when they cannot reach the Commonwealth Health Center for primary health care.

One EMSC project coordinator will be recruited to oversee the acquisition of computer hardware and software and to develop an appropriate data base to conduct and analyze a retrospective and concurrent needs assessment. The coordinator will also be responsible for disseminating this information and ensuring community input through public hearings. The coordinator will develop an evaluation system that will constitute the implementation plan for year 2.

Evaluation

The implementation grant application will be based on the assessment conducted in year 1 and will represent a significant evaluation tool. This assessment will (1) identify needs within the CNMI EMS system and make recommendations that address those needs; and (2) develop mechanisms for monitoring the EMS system for prehospital care of infants, children, adolescents, and CSHN. Evaluation will also include the extent of private-public and community involvement in the planning process (e.g., variety of agencies involved, broad cross-representation of the community).

Emergency Medical Services for Children

Grantee
Connecticut Department of Health and Addiction Services

Project Number MCH-094001

Project Period 10/01/94–09/30/96

Project Director
E. Marie Wilson, R.N.
150 Washington Street
Hartford, CT 06106
(203) 566-7336
(203) 566-7172 fax

Problem

On the systemwide level in Connecticut, few comprehensive programs specific to emergency medical services for children (EMSC) programs have been developed. Emergency medical services (EMS) capabilities that have been enhanced are the the result of local efforts. This lack of coordination of efforts creates an imbalance in the level of service available to pediatric patients throughout the State. Historically, EMS capabilities for pediatric patients have not been specifically targeted for enhancement but, rather, have been incorporated into general improvements of the overall EMS system. This approach has ignored the fact that children are more than "little adults"; they are, in fact, a special population with unique EMS needs.

Goals and Objectives

The major goals of the project are to: (1) Identify the current status of EMS pediatric capability in the State through a review and analysis of the efforts to enhance local programs; and (2) create a plan to develop comprehensive EMSC programs in a coordinated, systemic fashion. Major objectives of the first goal include a scientific review of current data; identification of additional necessary information; and development of mechanisms to capture this information. Major objectives of the second goal include a review of the total data collected; use of pediatric specialists and others with knowledge and experience in EMS and EMSC issues to develop a needs assessment for the State; and use of these specialists and others, including EMS experts and consumers, to finalize a detailed plan for resolving areas of need.

Methodology

The Connecticut Department of Public Health and Addiction Services (DPHAS), through its Office of Emergency Medical Services (OEMS), will be responsible for administering this project. The director of OEMS reports directly to the deputy commissioner of operations for DPHAS. The OEMS is statutorily established within DPHAS for the pur-

poses of licensing and certifying emergency medical services (EMS) personnel and provider organizations, overseeing and inspecting EMS equipment and facilities, setting rates, and developing the State's EMS programs.

Through this project the State will, for the first time, have an individual whose sole responsibility and focus will be the development of a statewide EMSC system. This person will work closely with the Pediatric Committee of the commissioner's EMS Advisory Board in all phases of the project.

The needs assessment will be based on data collection and analysis. Existing data will be obtained through the Connecticut Hospital Information Management Exchange data base of the Connecticut Hospital Research Education Foundation. For areas of concern in which current data are not available, survey instruments will be prepared and distributed to applicable elements of the EMS system. Analysis will determine statistically significant findings for inclusion in the needs assessment report. Survey targets will include prehospital and hospital personnel and organizations, consumers, community-based health care providers, pediatric specialists, and school nurses.

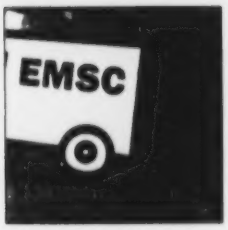
Problems will be identified through analysis of the data by the Pediatric Committee, consulting epidemiologists, and DPHAS. Prioritization of problems will be based on (1) short-term efforts to augment existing resources and impact the issues affecting the largest pediatric populations, and (2) long-term efforts to develop new capabilities and target issues affecting specific subgroups of the pediatric population.

Creation of the 5-year EMSC plan will be based on the needs assessment, problem identification, and prioritization. The plan will be subject to review and approval by the Pediatric Committee, the EMS Advisory Board, and the commissioner. The Funding Committee of the Advisory Board will explore funding sources through the State legislature, local and Federal agencies, and private grantors.

Evaluation

The submitted schedule of events will be used to track project activities. Staff evaluation will be based on completion of objectives in a timely fashion. Contracting for an individual with demonstrated knowledge in data collection and analysis will ensure that appropriate scientific methodologies are used to develop survey instruments and identify statistically significant information derived from this investigation.

The major deliverables in the project are the needs assessment report and the 5-year EMSC plan. These products will be reviewed and approved by the commissioner's EMS Advisory Board, which has expertise in all aspects of EMS. The final EMSC plan will receive public comment and approval by the commissioner of DPHAS.



Emergency Medical Services for Children

Grantee
Iowa Department of Public Health

Project Number MCH-194001

Project Period 10/01/95–09/30/97

Contact Person Ellen McCardle Woods

Project Director
Gary Ireland
Bureau of Emergency Medical Services
Lucas State Office Building
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Des Moines, IA 50319-0075
(515) 281-3239 or 281-3468
(515) 281-4958 fax

Problem

Iowa's framework for emergency medical services for children (EMSC) is fragmented. Pediatric emergency training is a need for all types of providers. In addition, many prehospital providers lack basic pediatric emergency equipment. In a rural State, the first medical contact in an emergency situation is extremely important. Training in pediatrics is available but not widespread across the State. Consistent leadership is lacking at the State and local levels. There is no system for data collection for adults or children. Schools, many with only a part-time nurse, are not prepared for emergencies among children with special health needs.

Goals and Objectives

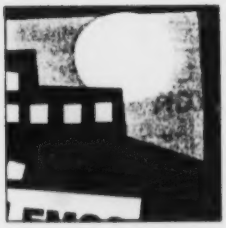
The project goals are to evaluate Iowa's current pediatric capabilities and to develop a comprehensive 5-year EMSC plan. First, a State EMSC coordinator will be hired. The coordinator will establish a coalition of individuals active in pediatrics. A needs assessment will be completed and distributed throughout the State. Upon evaluation of continued advancement of the system, future funding will be explored.

Methodology

Goals will be met by establishing a coalition of EMSC individuals and organizations to work with the Iowa Department of Public Health, Bureau of EMS. This will allow for coordination and regulation of all EMSC activities within the program.

Evaluation

Evaluation will be performed by the EMSC coalition and the coordinator as part of the quarterly reports.



Grant Proposal to Develop a Plan to Improve EMSC in Puerto Rico

Grantee
Department of Health

Project Number MCH-434001

Project Period 10/01/94–09/30/96

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Goals and Objectives

The Office of Emergency Medical Services (OEMS), Department of Health, is developing a plan for improving emergency medical services for children (EMSC) in Puerto Rico. To achieve this goal, the Puerto Rico OEMS will create an advisory committee composed of representatives from the medical community, public safety organizations, and the Fire Corps.

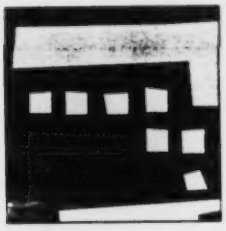
The objective of this project is to improve pediatric medical care in the following areas:

1. Injury prevention;
2. Prehospital medical care;
3. Emergency medical care for children;
4. Specialized medical care for children; and
5. Pediatric rehabilitation services.

Methodology

The advisory committee will conduct a needs assessment to identify current problems in the delivery of care within Puerto Rico's EMSC system. OEMS will hire a project coordinator, who will be responsible for collecting all the necessary data from hospital and prehospital services. These data will be used by the advisory committee as part of the process of finding possible solutions to the problems identified in the assessment. After the data-gathering process is completed, the advisory committee will develop a grant proposal for implementing these solutions.

EMSC



Georgia EMS for Children

Grantee
Georgia Department of Human Resources

Project Number MCH-134001

Project Period 10/01/93–09/30/96

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Problem

Existing basic components of the emergency medical services for children (EMSC) system require specific actions and directions. Particular areas of concern include: (1) Fragmented data collection and analysis; (2) concentration of trained personnel and emergency department resources in a few geographic areas; (3) insufficient focus on the specific needs of children in the large emergency medical services (EMS); (4) limited quality assurance information; and (5) high prevalence of intentional and unintentional pediatric injuries. In addition, fundamental trauma system development issues, including emergency medical services for children, need to be addressed.

Goals and Objectives

The project has established the following goals and related objectives:

Goal 1: Provide tiered training to public safety officers, prehospital EMS personnel, primary health care providers, and emergency department and critical care personnel.

Objectives:

a. Enhance first-responder curriculums and training of 1,200 public safety officers;

b. Certify 1,200 prehospital providers in pediatric life support each year, concentrating on underserved regions;

c. Provide instructor programs in Pediatric Advanced Life Support (PALS) to increase the number of instructors and affiliate faculty and to provide PALS courses twice in each region;

d. Adapt a PALS enhancement course and provide it at least 90 times; and

e. Strengthen the abilities of primary health care providers to assess and manage pediatric critical care situations, and offer inservice training in all regions.

Goal 2: Impact community behavior by providing public information and education programs on injury prevention and the care of critically ill or injured children.

Objectives:

a. Establish a cadre of EMS injury prevention specialists to conduct 2,000 injury prevention

presentations in community settings and train 10,000 people in bystander care and/or Pediatric Basic Life Support; and

b. Strengthen EMS community involvement with local injury prevention groups and focus attention on EMSC issues within these groups.

Goal 3: Build the capacity of the EMS system to address the needs of pediatric patients and evaluate system effectiveness.

Objectives:

a. Build support for EMSC activities;
b. Refine emergency department criteria and prehospital care protocols; and
c. Establish surveillance and quality improvement capacity.

Methodology

The Georgia EMSC (GEMSC) approach reflects Georgia's EMS structure and the level and types of activities now underway. Much of the GEMSC activity will be implemented by the 10 regional EMS offices. GEMSC strengthens existing entities and activities by establishing EMSC resource capacity in weak, predominantly rural areas, augmenting ongoing programs with expanded EMSC material, and delineating procedures for the needs of critically ill or injured children. These activities are combined with comprehensive, cohesive data collection and analysis to drive planning and policymaking.

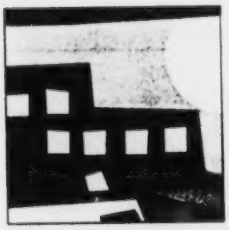
Coordination of project activities occurs within the State's EMS office and is the responsibility of the project coordinator, who is assisted by a community program liaison and an administrative secretary.

Evaluation

Process evaluation will track progress in the following areas: Adherence to workplans; product development; training; levels of field activity; implementation of studies and production of reports; promulgation of protocols, criteria, and guidelines; and enactment of regulatory and statutory change. Monitoring will be ongoing.

Experience to Date

GEMSC has experienced pleasing success with the training of prehospital and inhospital personnel. A very enthusiastic medical advisory work group has developed PALS enhancements and continuing education modules for primary care providers. Injury prevention and community education activities within the EMS community are growing. The GEMSC advisory council is currently reviewing and adapting emergency department criteria, pediatric clinical practice guidelines for emergency departments, and prehospital protocols. Establishing advocacy and community awareness regarding EMSC issues is prompting new activity. Data collection is expanding and becoming more uniform, increasing the opportunity to accurately assess system performance.



Illinois Emergency Medical Services for Children Implementation Plan

Grantee
Loyola University of Chicago

Project Number MCH-174001

Project Period 10/01/95–08/31/97

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Problem

Loyola University of Chicago in collaboration with the Illinois Department of Public Health (IDPH) seeks to implement a strategy that will address the findings of the Illinois Emergency Medical Services for Children (EMSC) Needs Assessment Survey. The establishment of the Illinois EMSC Advisory Board in 1994 was the first step toward identifying and addressing the health care needs of children. In Illinois, where homicide and suicide rates in children continue to escalate, a comprehensive survey was completed characterizing the deficiencies in health care. The consequence of inadequate resources and a lack of organization continues to permit children to die of preventable trauma. The obstacles to implementing an organized and cohesive approach to addressing pediatric health care needs have been determined and prioritized by a coalition of individuals, organizations, and agencies that encompass the newly developed EMSC system. These obstacles include lack of education; minimal legislative mandates; widespread variations in expertise and training; few accepted standards for access, care, and prevention; insufficient monitoring, review, and research to identify better models of care; and insufficient resources to implement change.

Goals and Objectives

The project goals are:

1. A significant reduction in the pediatric mortality caused by trauma;
2. A 10-percent reduction in the associated unintentional injury morbidity;
3. A 10-percent reduction in pediatric homicides; and
4. The implementation of the necessary elements to not only attain the first three goals, but enable Illinois EMSC to sustain these achievements.

Goals will be derived through objectives. The educational needs of health care providers will be addressed, with a focus on appropriate disease recognitions, pediatric assessments, stabilization, and treatment modalities that favor improved out-

comes. The provider groups identified include first responders, EMT-Basic paramedics, emergency physicians, pediatricians, family practitioners, emergency nurses, and school nurses. The State's high rates of intentional injury and homicide must be addressed by all components of Illinois EMSC. A focus program on violence prevention that includes the victims and perpetrators as well as community groups, educators, parents, and health care workers will be implemented. The program will address the attitudes and behaviors that increase the potential for violent acts. The capability to define system deficiencies, project future needs, and evaluate intervention must be established as one of the first steps of implementation. A Pediatric Data Surveillance system that will provide these qualities will be critical. The final objective reflects the work of more than 100 individuals and is the implementation of recommendations made by the EMSC advisory board and its 6 task force committees. These recommendations, which represent the basis for future EMSC growth, require enactment. They include pediatric equipment standards, treatment protocols, facility recognition, E-Code documentation, and legislative initiatives.

Methodology

Attainment of goals and objectives will be accomplished by: Incorporating the Utah EMSC EMT assessment course into an Illinois EMSC-sponsored curriculum, provided to all levels of prehospital providers; providing Pediatric Basic Trauma Life Support courses in both rural and urban settings; providing emergency physicians, pediatricians, and family practitioners access to courses such as Pediatric Advance Life Support and Advanced Pediatric Life Support; collaborating with the Illinois Emergency Nurses Association to implement in rural settings advanced pediatric nursing skills through the Emergency Nursing Pediatric course; assisting IDPH and the Connecticut EMSC project to initiate a model school nurse curriculum addressing pediatric assessment and care; implementing three injury prevention programs that address violence and homicide in children; collaborating with the National Highway Traffic Safety Administration in incorporating minicodes software into five Illinois data bases that can provide data linkage on pediatric injury, illness, and associated costs; and continuing to use IDPH and the National EMSC Resource Alliance to further coalition building, implement legislative initiations, and promulgate standards that realize the elements required of the statewide Illinois EMSC project.

Evaluation

The IDPH-appointed EMSC advisory board will oversee the implementation of the grant project. The current plan for monitoring education includes pre-evaluation and postevaluation of all attendees of the EMSC-sponsored educational activities. These tools will be used in conjunction with the Pediatric Surveillance System that will permit evaluation of prehospital interventions, trauma care, cost, and injury prevention measures such as child car safety seats. The management of the program administration will also be provided by the EMSC advisory board.

Improving Emergency Medical Services for Children in Massachusetts

Grantee
Massachusetts Department of Public Health

Project Number MCH-254001

Project Period 10/01/92–03/31/96

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Problem

Children differ from adults both physically and emotionally, and the treatment of critically ill or injured children must meet their unique needs. An illness or injury that may not be serious to an adult can have long-term impact on a child's physical and emotional well-being. Emergency medical services for children (EMSC), incorporating prehospital care, hospitalization, rehabilitation, and community followup, must take into consideration special needs

Approximately 1,420 children ages birth through 21 years die each year in Massachusetts. The majority of these deaths are in children under 1 year of age, who die from perinatal and medical conditions. Trauma is the leading cause of death in children older than 1 year of age, both nationwide and in Massachusetts. In 1990, 583 children ages 1–21 years died; 365 (62.6 percent) due to injuries, and 218 (37.4 percent) due to medical conditions. In that same year, 10,521 children were admitted to hospitals because of injuries. Until recently there was no organized statewide plan for providing emergency care for ill or injured children in Massachusetts. Gaps have been identified in the areas of system standards, training, data, access, and injury prevention.

Goals and Objectives

This project will improve and expand EMSC in Massachusetts, with the intent of integrating pediatric standards into a variety of services that will be sustained after the grant period. The overall goal of the project is to ensure the delivery of state-of-the-art emergency medical services (EMS) to all children in Massachusetts in a coordinated and efficient manner, in order to reduce mortality and morbidity resulting from illness or trauma.

The six project objectives are to:

1. Develop pediatric practice standards and policies and integrate them into the Massachusetts emergency medical services system;
2. Increase the level of knowledge and skill required among emergency medical personnel to care effectively for ill or injured children;

3. Improve the quality of hospital data that can be used to monitor the incidence and causes of nonfatal childhood injury hospitalizations;
4. Create a baseline for evaluating EMS system performance over time;
5. Reduce access barriers to EMS for all children in Massachusetts; and
6. Increase collaboration between EMS providers and injury prevention practitioners in statewide and community-based projects.

Methodology

Pediatric protocols and standardized ambulance equipment lists will be distributed to prehospital providers; and guidelines will be developed for aeromedical and interfacility transfer.

Pediatric curriculums will be developed for training emergency medical technician (EMT) instructors, paramedics, and emergency department nurses and physicians. EMT instructors will in turn impact 3,000 licensed EMTs across the State.

Through advocacy, education, and targeted site visits, the project will improve documentation of injury including external causes of injury (E) codes in hospital discharge records. A study will be carried out to determine the extent of pediatric trauma regionalization within the current system.

The access barriers to EMS services, particularly among minorities, will be documented, and a plan will be developed to reduce these barriers. A brochure will be developed and a series of training programs for nurses will be conducted to link families of children with special health needs to available supportive and therapeutic services.

The project will target key EMS providers and injury prevention practitioners for activities designed to increase collaboration. Activities include a needs assessment, a seminar, a newsletter, and contracts for community projects.

Major EMS activity is being carried out by the Massachusetts Public Health Department, Office of Emergency Medical Services (OEMS), to revise and enhance emergency services in Massachusetts. The EMSC project is integrating all of its activities with those being carried out by OEMS through its EMS 2000 initiative. In addition, the project has developed a number of its own working committees, which involve EMS providers and administrators from all regions of Massachusetts.

Evaluation

Process measures will be used to monitor the progress of the six objectives to assess the impact of project activities on the EMS system. Every activity will be tracked by staff and reviewed by the steering committee. The trauma regionalization study will provide baseline data for comparing the system's performance before and after the EMSC initiative.

Experience to Date

Project staff have been hired, and a steering committee meets on a regular basis. A statewide advisory council is being formed and will meet twice a year to give overall direction to the project. Progress has been achieved on the first three objectives. Eleven pediatric protocols have been written for prehospital providers, and planning is underway for training EMT instructors in pediatric emergency care. This training will include curriculum for new EMTs as well as refresher training for experienced EMTs. The training is being planned and evaluated by the Training Committee, which draws its membership from all regions of the State. The Public Health Department is producing a position paper in support of E coding of all hospital injury diagnoses and is working with the Massachusetts Hospital Association to report to hospitals on their progress with E coding.

Addressing the Emergency Medical Needs of Children in Minnesota

Grantee
Minnesota Department of Health

Project Number MCH-274001

Project Period 10/01/93–09/30/96

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Problem

The Minnesota Department of Health (MDH) recognizes that the special needs of children with serious trauma and illness challenge the organization, personnel, equipment, and facilities of emergency medical services (EMS) providers statewide. MDH does not have the funds and staff to study the statewide status of emergency medical services for children (EMSC) in Minnesota and to provide the needed resources and leadership based on the results of that study. The Minnesota EMS system lacks an ongoing, statewide, coordinated effort specifically focused to meet children's needs for emergency medical services. The system lacks standardized prehospital protocols and training in pediatric emergency care for prehospital personnel, as well as coordination of pediatric prehospital, hospital, and rehabilitation resources.

Goals and Objectives

The goals of the project are to:

1. Make pediatric emergency care training accessible to EMS prehospital providers statewide, emphasizing services for Minnesota's Native American population;
2. Conduct a retrospective study of pediatric ambulance run reports to identify special needs and to develop appropriate protocols for EMS providers;
3. Develop, modify, and distribute prehospital and interfacility emergency care triage, treatment, and transport protocols to ambulance services, using the findings of the retrospective study (goal 2);
4. Examine the pediatric emergency care resources of each of Minnesota's 149 acute care hospitals, and provide hospital-specific supplemental resource materials to enable each hospital to improve its emergency care and rehabilitation capabilities; and
5. Establish a pilot project using computer-driven interactive videodisc (IVD) technology in two regions.

Program objectives for the coming year are to:

1. Develop outcome criteria for regional retrospective studies on ambulance run data;

2. Develop a provider and instructor course curriculum based on a revised curriculum for the Pediatric Emergency Care Course (PECC);
3. Complete contractual agreements for pediatric courses and regional data studies;
4. Measure the learner objectives;
5. Begin offering the course for instructor and provider training;
6. Produce final reports from the studies on ambulance run data;
7. Assimilate ambulance data reports into the pediatric emergency medical care triage, treatment, and transport protocols for prehospital personnel;
8. Develop, produce, and distribute prehospital and interfacility triage, treatment, and transport protocols;
9. Provide one instructor course for Indian reservations through a subcontract with the Bemidji Area Indian Health Service;
10. Develop criteria for and distribute to Minnesota's acute care hospitals a hospital self-study assessment booklet;
11. Create a review team for hospital assessment;
12. Develop resources for the hospital self-study assessment packet, and distribute packets;
13. Evaluate and replicate products and strategies developed in Minnesota for use in other States involved with EMSC activities;
14. Conduct and evaluate the IVD pilot project for potential statewide application;
15. Ensure inclusion of pediatric data in the State's trauma registry;
16. Establish and enhance linkages with other programs for the support of EMSC, and disseminate information regarding EMSC activities; and
17. Seek ongoing funding and program support to continue EMSC efforts.

Methodology

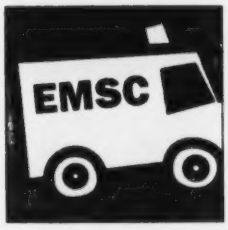
The project is being directed by MDH, Emergency Medical Services Section, which will provide leadership and technical support for the EMSC activities. The Steering Committee will serve as a resource for the EMSC coordinator and the commissioner of health by providing expertise and experience concerning EMSC policy and procedures. An instructor course in pediatric emergency care will be provided, and instructors from this program will then train providers in their regions. Minneapolis and St. Paul Children's Hospitals will be solicited to provide complete onsite pediatric emergency care internships for emergency medical technicians (EMTs). The regional ambulance run data report will be completed. In developing prehospital protocols, coordination will take place with the trauma grant, the ambulance data study, and the Traumatic Brain and Spinal Cord Registry in collaboration with members of the Minnesota Association of Emergency Physicians. The pediatric emergency care resources of Minnesota's 149 acute care hospitals will be assessed, and supplemental resource materials will be developed. The Virginia and California assessment programs for hospital pediatric emergency care will serve as models.

Evaluation

All new program activities will be reviewed by the EMSC program and/or EMSC Steering Committee before implementation. Course evaluations as well as learner objective measurement tools will be summarized and reviewed, and adjustments will be made, as indicated by provider knowledge after each learning course module.

Experience to Date

The efforts of the EMSC staff and Steering Committee have been commendable. The program is at a minor pause due to staffing changes. However, efforts are now well underway by the MDH and the Steering Committee to complete goals and objectives as planned. The highlights of the past year include the completion of the PECC curriculum, the near completion of curriculum materials, and the positive reception to the CD-I educational program. Key individuals and organizations continue to participate in EMSC activities, demonstrating support for EMSC in the State.



A Montana EMSC Data, Injury Prevention, and Training Program

Grantee
Montana Department of Health and Environmental Sciences

Project Number MCH-304001

Project Period 10/01/95–09/30/97

Project Director
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Problem

Montana lacks a statewide prehospital emergency medical services (EMS) data collection and analysis system linked to quality improvement and medical control, and has limited information concerning pediatric emergency care. Despite a high trauma death rate among Montana's youth, there is no comprehensive statewide injury prevention and control program. Pediatric emergency training for prehospital personnel, nurses, and physicians has been sporadic and based primarily on the availability of resources. The training is not incorporated into the infrastructure of the EMS training system.

Goals and Objectives

The goals and objectives of the project are to:

1. Improve pediatric data by establishing an automated statewide prehospital data collection system.

   Objectives:

   a. Develop a standardized, statewide prehospital minimum data set;
   b. Set standards for a computer platform for prehospital EMS data collection and analysis, service management, education and regional/State networking;
   c. Develop a Stateterm contract for the procurement of computer hardware;
   d. Procure a standard, statewide software package for the prehospital data set; and
   e. Install standardized, multipurpose computer hardware in 52 local EMS and provide training for personnel.

2. Make Montana a "safe State" by developing a coordinated statewide, data-driven injury prevention program in the department of health and environmental sciences.

   Objectives:

   a. Hire an injury prevention coordinator;
   b. Develop and evaluate a Montana strategic plan for injury prevention;
   c. Use existing injury prevention programs to target areas of specialized needs; and
   d. Ensure a family-centered approach to prevention and public information.

3. Improve pediatric emergency education of emergency health care providers by taking advantage of current alternative technologies, and ensure education's continued viability by institutionalizing it into the EMS education system.

   Objectives:

   a. Improve the pediatric emergency training of Montana's prehospital emergency medical services providers during the rollout of the 1994 EMT-Basic National Standard curriculum;
   b. Provide computer-based continuing education on prehospital pediatric care;
   c. Deliver CD-ROM training programs on pediatric respiratory emergencies, pediatric trauma, and pediatric medical emergencies;
   d. Reformat the Utah EMSC interrupted linear video workbooks to interactive CD-ROM;
   e. Incorporate a pediatric module into the Trauma Nurse Training Program; and
   f. Conduct three remote telecommunications PALS courses.

Methodology

Building upon the National Highway Traffic Safety Administration Uniform Prehospital Data Set, a statewide EMS data set will be developed including pediatric data elements. Multipurpose computers and standard software will be placed in local EMS agencies and linked together for purposes of quality improvement, data collection, education, and training, and EMS personnel will be trained.

By hiring an injury prevention coordinator, securing expert consultant services and establishing an injury prevention task force, the department will develop a strategic plan for injury prevention and begin to implement and evaluate that plan.

Pediatric emergency training will be incorporated into the infrastructure of Montana EMS training by including the training in the new EMT curriculum rollout and by taking advantage of a variety of computer and telecommunication technologies to increase accessibility and utility of training for prehospital personnel, nurses, and physicians.

Evaluation

During year 1 evaluation will be predominantly process oriented: Are the timeframes and grant objectives being met? As the data system is implemented and as outcome measures become better delineated nationally, the evaluation will gradually shift to a determination of program impact on patient morbidity and mortality.

Emergency Medical Services for Children in Pennsylvania

Grantee
Pennsylvania Emergency Health Services Council (PEHSC)

Project Number MCH-424001

Project Period 10/01/94–09/30/97

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Problem

The Division of Emergency Medical Services Systems, Pennsylvania Department of Health, needs an organized advisory body that can focus its attention on prehospital care for pediatric patients. Many health care providers and educators would like to have greater opportunities for education about pediatric prehospital care. Those wishing to improve the system as well as those wishing to provide educational programs are hindered by the lack of epidemiologic data on the current needs for pediatric prehospital care in Pennsylvania. Those wishing to conduct injury prevention projects need centralized, readily accessible resources including information on safety issues and information regarding the methods and needs to be addressed in order to most effectively reach the targeted population.

Goals and Objectives

The project goals are to initiate and develop a continuing process for:

1. Using available expertise to advise the Department of Health and other organizations on issues related to emergency medical services for children (EMSC);
2. Conducting a needs assessment concerning EMSC and establishing a system for doing so in an ongoing fashion;
3. Providing educational programs and materials on pediatric emergency care to prehospital providers; and
4. Linking those who are providing education in pediatric injury prevention with available resources in pediatric injury prevention.

The project objectives are to:

1. Establish an EMSC advisory committee within the emergency medical services (EMS) system in Pennsylvania, through the Pennsylvania Emergency Health Services Council (the advisory body of the Division of EMS Systems);
2. Establish an EMSC data base linking data from the EMS trip report form and other data bases related to EMSC in Pennsylvania;

3. Use the trip report form data base and information from all other available data bases for EMSC needs assessment;
4. Assess the need for pediatric emergency care training through different types of surveys;
5. Provide pediatric educational programs to prehospital providers by using available training programs and materials;
6. Provide limited funds to Heart Association affiliates with the specific purpose of enhancing the pediatric advanced life support program in underserved areas;
7. Enhance the pediatric educational component at the State annual EMS conference; and
8. Establish an office for pediatric injury prevention resources in Pennsylvania.

Methodology

The project will:

1. Solicit representatives to the EMSC Committee from among the Pennsylvania Emergency Health Services Council member organizations, other organizations, the pediatric community, and the public;
2. Form several subcommittees with expertise on each task group to address specific needs as identified;
3. Conduct a needs assessment, including intensive reviews on selected calls, by using the statewide EMS trip report form data base;
4. Identify data bases—including the Pennsylvania EMS trip sheet data base, Pennsylvania Trauma System Foundation trauma registry data base, emergency department discharge data base, hospital discharge data base, data from the Fatal Accident Reporting System (FARS), and the Department of Transportation crash data base—for linkage to the EMSC data base;
5. Purchase software and seek technical assistance to facilitate linkage of data bases;
6. Maintain a registry on the number of prehospital providers enrolled in pediatric training programs;
7. Survey paramedics and emergency medical technicians regarding EMSC training needs;
8. Provide funds to certain training entities to continue training programs in pediatric emergency care;
9. Offer pediatric emergency care lectures and hands-on sessions at the State annual EMS conference;
10. Develop a pediatric injury prevention and control curriculum for school-aged students with organizations including the American Medical Student Association;
11. Obtain and purchase selected pediatric prehospital care programs for distribution to each of the 16 regional EMS councils in Pennsylvania;
12. Employ an EMSC project coordinator, a prevention specialist, and a clerical staff;
13. Establish a toll-free number for the public at the injury prevention office;
14. Publish a quarterly newsletter on pediatric injury prevention and other EMSC issues; and
15. Gain access to available EMSC computer networks.

Evaluation

The Department of Health will review recommendations submitted by the Pennsylvania Emergency Health Services Council's EMSC Advisory Committee.

Pennsylvania Emergency Health Services Council staff will conduct a survey to assess the

awareness of the availability and roles of the EMSC Advisory Committee.

The reports on methodology and test linkages on data bases will be reviewed by the EMSC Advisory Committee by the end of year 1.

Reports on needs assessment, including data analyses and survey results, will be given to the EMSC Advisory Committee for review.

Pennsylvania Emergency Health Services Council staff will conduct evaluations on the lectures and hands-on sessions related to EMSC given at the State annual EMS conference.

The EMSC project staff will conduct a survey to assess the awareness and function of the injury prevention resources office.

By the end of year 1, the EMSC project staff and their work group will be able to identify injury prevention programs for school-age students and particular needs within Pennsylvania.

Experience to Date

There has been a delay in receiving the contract from the Pennsylvania Department of Health. However, efforts are still well underway. The highlights of the past year are the establishment of the EMSC advisory committee and the initial coalition building with the State MCH office and local health and injury prevention agencies.

Rhode Island Emergency Medical Services for Children Program

Grantee
Rhode Island Department of Health

Project Number MCH-444001

Project Period 10/01/93–09/30/96

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Problem

Although 1,617 children were hospitalized because of injuries in Rhode Island during 1990, current instructional programs for emergency medical technicians (EMTs) in Rhode Island are oriented toward the needs of adult patients and do not take into account the significant physiological and emotional differences involved in treating critically ill or injured children.

Children and families with limited English proficiency are particularly vulnerable to medical emergencies as a result of language and cultural barriers and parents' unfamiliarity with the health care delivery system. The 1990 census identified Southeast Asian and Spanish-speaking residents as the fastest growing population groups in the State; these families are likely to experience difficulties in identifying emergency situations, providing basic first aid until rescue personnel arrive, and accessing timely and appropriate care for injured or critically ill children, because existing injury prevention and health promotion initiatives are geared to the needs of English-speaking families.

To improve the quality of care for all injured children in Rhode Island, new pediatric care protocols must be implemented for all levels of practice in emergency medical services (EMS). In addition, efforts must be undertaken to expand coverage of pediatric emergencies in basic EMT training courses at each level of practice and to increase opportunities for continuing education in the management of pediatric emergencies.

Goals and Objectives

The Department of Health proposes to increase the years of healthy life for Rhode Island's children by developing a comprehensive education and training program to improve the capabilities of EMS providers and expand childhood injury prevention efforts. The Department of Health will seek to achieve two principal goals: (1) Providing training to EMS personnel that is specifically tailored to the needs of children, and (2) developing culturally sensitive parent education materials tailored to the needs of Southeast Asian and Latino families.

Methodology

The Department of Health's emergency medical services for children (EMSC) initiative will provide expanded training in the treatment of pediatric injuries to more than 1,000 EMTs statewide through a combination of new educational programs. Training courses for basic-level (EMT-A) and intermediate-level (EMT-C) prehospital personnel will be augmented to include a significant pediatric component. Since these changes will be included as part of the basic curriculum for both programs in subsequent years, expanded pediatric training will ultimately become available to the majority of the State's prehospital providers through basic instruction or continuing education programs. In addition, during project years 1 and 2, the Department of Health will offer courses in basic trauma life support (BTLS) and pediatric advanced life support (PALS), as well as seminars on pediatric injuries throughout the State.

Materials developed by other EMSC grantees (e.g., New York, North Carolina, Washington) will be incorporated into the Department of Health's EMT pediatric training programs, along with existing curriculums from the American Heart Association's PALS course and the American College of Emergency Physicians' BTLS program. Prior to training, the EMS training coordinator and the medical consultant to the Division of Emergency Medical Services will review the Department of Health's recently revised pediatric care protocols and expand the coverage of pediatric emergencies in the State's basic (EMT–A) and cardiac (EMT–C) training programs for prehospital personnel.

Parent education materials developed by other EMSC grantees (e.g., New Mexico, Oregon, Florida) will be evaluated for their appropriateness for Spanish-speaking and Southeast Asian audiences. Community agencies will assist in identifying members of the Southeast Asian and Latino communities in Rhode Island to be trained as parent educators.

The first-year budget of $248,754 will fund three new staff positions in the Division of EMS to manage and implement program goals, establish contracts with one or more community agencies to conduct parent education sessions, and retain the services of translators to help create educational materials in several languages (including Cambodian, Hmong, Lao, Thai, and Vietnamese). In addition, the Department of Health will contract with the American Heart Association to conduct a series of PALS courses for EMS personnel throughout the State. Sufficient funds are also budgeted for required travel, training equipment, supplies, and the indirect costs associated with project activities. The project will be administered by the chief of EMS with support from the department's Injury Prevention Program and the Trauma Care Systems Project. The implementation of this project will significantly improve the delivery of EMS for the State's children by expanding educational opportunities for providers and parents.

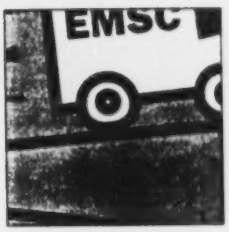
Evaluation

EMT training programs will be evaluated by a comparison of the adequacy of prehospital care for pediatric patients before and after completion of training programs. In addition, each training course will include a written pretest and written and practical skills tests to measure the effectiveness of the Department of Health's expanded pediatric training activities.

Community agencies that contract with the Department of Health to provide parent education courses for populations with limited English proficiency will administer standardized pretests and posttests to all participants.

Experience to Date

Despite protracted delays in obtaining staff and equipment, the project's second year demonstrated significant progress and growth. Accomplishments to date include developing and implementing many educational programs and resources to enhance initial EMT training, and to help currently practicing EMTs update to the new standards; orientations and updates for EMS leaders and medical control physicians; and pediatric case reviews, followup, instructor development, and other continuing quality improvement programs.



Regionalization of Care for Pediatric Patients

Grantee
South Carolina Department of
Health and Environmental Control

Project Number MCH-454001

Project Period 10/01/94–09/30/96

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Problem

South Carolina's demographics and prehospital emergency medical care data illustrate a pediatric population at high risk for mortality and morbidity from childhood injury, trauma, and illness. South Carolina ranks 19th in the Nation in the percentage of population under 18 years of age (26.4 percent). South Carolina ranks 11th in the Nation in motor vehicle crash deaths per 100,000 population and 6th in the Nation for its violent crime rate per 100,000 population. Prehospital ambulance run data have shown that rural areas and areas with higher poverty rates have the highest percentage of pediatric ambulance runs. A preliminary survey indicates that these areas lag behind other regions of the State in prehospital pediatric specialty training. Compounding the problem is the fact that many of these rural areas are not covered by hospitals participating in South Carolina's current trauma system.

Goals and Objectives

The goal is to reduce the mortality and morbidity of pediatric medical and trauma patients in the Low Country and Pee Dee regions of the State by improving the system of care for the pediatric patient.

The objectives are to:

1. Increase pediatric training for personnel in prehospital EMS and rural hospitals in the Low Country and Pee Dee regions;
2. Establish regional systems for pediatric emergency care by developing plans and protocols for treatment and referral to designated facilities with special capabilities;
3. Develop an injury surveillance system for prehospital and hospital data collection that would capture all pediatric injuries and illnesses;
4. Using the data collected through the surveillance system, complete an analysis designed to determine continuing system problems, suggest changes to improve the statewide system for pediatric care, encourage and support legislation to prevent childhood injuries, and develop long-range objectives to upgrade the current EMS system by inte-

grating policies and protocols that address the needs of pediatric patients; and

5. Develop educational programs for the public regarding how to access the EMS system and prevent injuries.

Methodology

The South Carolina Department of Health and Environmental Control (DHEC), Division of Emergency Medical Services (EMS), headquartered in Columbia, is the lead agency responsible for administering EMS and will administer the project. DHEC has four deputyship areas; the Division of EMS is a division of the Bureau of Health Facilities Regulations, which is a subcomponent of the Health Regulation Deputyship of DHEC. The University of South Carolina School of Medicine and the Medical University of South Carolina have agreed to assist DHEC in directing the activities of the project.

With the assistance of assessment tools and model protocols developed in earlier projects related to emergency medical services for children (EMSC), South Carolina will transform its current prehospital and hospital system into an integrated system for adult and pediatric emergency care, beginning with two targeted EMS regions. EMSC development activities will be guided by a multidisciplinary committee with special expertise in EMS and pediatric medical care. The Division of EMS will begin its activities by establishing more definitive pediatric injury and illness baseline data and determining where gaps in data exist. To supplement current data systems, a method will be developed to capture information regarding pediatric patients who are treated and released from emergency departments in targeted hospitals. This information, currently not available, will provide a more complete picture of regional pediatric injuries and illnesses. The data retrieved from all these sources will be used to adapt EMS systems and prehospital and hospital training needs and to develop public education programs addressing system access and injury prevention. Initial grant activities will also include evaluation and assessment of prehospital and hospital training, manpower, equipment, and facility resources. Once the assessments are complete, additional pediatric training, including the development of a preceptorship program provided by the schools of medicine, will be offered to prehospital and hospital personnel. Pediatric treatment and transfer protocols will be developed on the basis of the results of the assessments and earlier EMSC project models.

Evaluation

Currently, data on pediatric injuries and illnesses are available from two sources within the Division of EMS—the ambulance run report, and the statewide trauma registry. These sources provide information on demographics, cause of injury, severity of injury, treatment procedures, and outcome measures. Data are also available for evaluation from the Division of Vital Records (cause of death) and hospital discharge data. These resources, plus information gathered from the targeted emergency departments during the grant, will provide a monitoring tool for evaluation of training and regionalization outcomes and injury prevention activities as the grant is completed. Evaluation will also include analysis of the results from each of the specific objectives of this project.

Experience to Date

Despite a 6-month delay in achieving a full complement of staff in the first year of the grant, several important milestones have been reached. These

include: (1) The formation and meetings of the full EMSC committee and two subcomittees; (2) the development of criteria for the designation of pediatric trauma centers and emergency departments approved for pediatrics; (3) the drafting and filing of legislation to create a permanent EMSC program; and (4) the new State requirement of hospitals to submit outpatient data. (Of specific interest are data regarding pediatric patients seen and released from emergency departments.)

First year training goals for the grant, excluding the implementation of the North Carolina course, have also been met.

Emergency Medical Services for Children

Grantee
University of South Dakota

Project Number MCH-464001

Project Period 10/01/93–09/30/96

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Problem

South Dakota is a large, sparsely populated State with three distinct populations. There are few pediatric specialists and no specific pediatric provisions in the existing emergency medical services (EMS) system. The State childhood death and injury rates exceed those of the United States as a whole.

Goals and Objectives

The goals and objectives of the project are to:

1. Determine the pediatric capabilities of the current EMS system;
2. Evaluate the outcome and services provided to acutely ill and injured children;
3. Target prehospital and inhospital providers with broad-based educational programs; and
4. Focus an aggressive public information and education effort on injury prevention and accessing EMS.

Methodology

Equipment and training resources of ambulance services and emergency rooms will be evaluated by questionnaire.

All ambulance run forms for pediatric patients will be monitored.

Five sentinel illnesses and injuries will be chosen and followed in the four major hospitals in the State.

All pediatric admissions to the two trauma programs will be identified and followed using the trauma registries.

Emergency medical technicians (EMTs) will receive training in an appropriate pediatric course.

Paramedics and physicians will be offered the Advanced Pediatric Life Support (APLS) course.

The North Carolina emergency room course will be given via teleconference to the pediatric, critical care, and emergency nurses. This will be followed by the ENPC program given by the Emergency Nurses Association.

The course Planning to Avoid Childhood Emergencies will be taught by local ambulance services.

Use of bicycle helmets will be evaluated.

A head-injury prevention program stressing use of bicycle helmets will be held.

Public information will be provided for all regions, explaining how to access the EMS system.

Evaluation

Equipment and training resources of ambulance services and emergency rooms will be evaluated by questionnaire at the end of each year to monitor progress.

All patient-related data will be analyzed for trends.

All ambulance services will be offered at least one course by the end of the first year.

The APLS and pediatric emergency nursing program will be evaluated by course attendance.

All pediatric deaths in the State will be evaluated.

Bicycle helmet use will be monitored for increased compliance.

Experience to Date

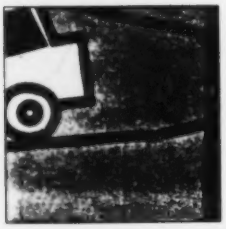
Initial surveys of ambulance services and hospitals have been obtained and evaluated. Many deficiencies were noted and areas of improvement are being targeted. A health educator was hired and began work in August 1994.

State ambulance run reports are being collated and meetings are being held with the State EMS office and the State epidemiologist to facilitate development of software to allow specific interpretation of the data stored from over 40,000 reports. An Injury Prevention Task Force is being formed to facilitate collection of data and address specific injury prevention issues for the State.

The educational goals of the grant have been a major focus of our efforts to date. Over 100 nurses and 11 physician assistants have attended a Pediatric Emergency Care course. The first Pediatric Prehospital Care Instructor course was recently given in the western part of the State. Another course, planned for October, will be presented in conjunction with the State EMT conference. Pediatric training sessions have been provided at conferences and over the rural development teleconference (RDT) network for over 2,000 health care providers. The project is actively working with the State EMS office in updating pediatric equipment and treatment protocols.

The Child Community Awareness and Resource Education (C.A.R.E.) injury prevention and first-aid course for the general public is in the final stages of development. Training for EMT instructors is planned and will be given over the RDT-network. Through a joint effort with the State Injury Prevention and Control Office, instructor kits and slide sets are being distributed to every ambulance service in the State. Other collaborative efforts include a bicycle safety program and distribution of Pedi-Pal safety seats to every ambulance service in the State.

Two days of pediatric training were provided at the second annual Aberdeen Area Native American EMS Conference. The second project position of health educator has not been filled. This position has been difficult to fill due to lack of individuals qualified to address the Native American training needs. In order to overcome this situation it is the intent of the project to use funds from this position to contract with key educators around the State to assist in providing this training for both the reservations and the more rural areas of the State.



Tennessee EMSC State Systems Implementation Grant

Grantee
Tennessee Department of Health

Project Number MCH-474001

Project Period 10/01/94–09/30/96

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Problem

Although there are many sporadic independent efforts aimed at improving emergency medical services for children (EMSC), no EMSC system exists in Tennessee. In this project, the State Subcommittee for Pediatric Emergency Care will implement (1) a system of statewide training for providers and the public, and (2) regionalization of emergency care. For impact analysis we have selected three areas that are representative of the statewide population in regard to ethnic and economic distribution, geography, and the number of pediatric emergency cases per year.

Goals and Objectives

The project's three major goals are to:

1. Develop an EMSC system;
2. Increase the knowledge base of prehospital and community hospital emergency department personnel in pediatric emergency care; and
3. Implement a public education campaign to improve safety-oriented practices.

Methodology

The three goals are to be realized through eight specific aims:

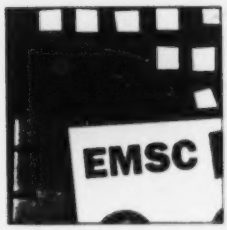
1. Implement data collection in the target counties by the end of year 1, using a modified data set recommended by the Institute of Medicine. The information requested permits us to follow the care of a particular patient from the time a call is initiated to disposition from the local emergency department. Summaries of the aggregate data will be made available to the participating hospitals and services for their use in continuous quality improvement.
2. Create a statewide EMSC data collection system by the end of year 2 by institutionalizing the data set.
3. In year 2, convene two consensus panels to create a classification system for the pediatric emergency and critical care capabilities of health care facilities and to generate destination guidelines (triage and transfer) based on patient acuity and the classification system.

4. Facilitate ongoing communication with prehospital and hospital providers throughout the State by publishing an EMSC newsletter and establishing an electronic bulletin board by the middle of year 1.
5. Establish community links for public awareness efforts during year 1. We plan to generate at least two public awareness segments per year in each local broadcast and newspaper in the study regions during the 2 years of this grant.
6. By the end of year 2, document the impact of the public awareness campaigns by performing parking lot surveys of compliance with safety regulations such as child restraint use.
7. Using the existing State community college system, develop a statewide corps of instructors who can teach the modified North Carolina EMSC curriculum and produce a set of teaching videotapes by the ninth month of year 1.
8. Train 30 percent of the prehospital and hospital providers in the emergency management of children by the end of year 1 and 80 percent by the end of year 2.

Institutionalizing the EMSC program in Tennessee beyond the grant period will be accomplished in several ways. The data collection process will be formalized by the State bodies that regulate hospital emergency departments and prehospital services. The training component will be self-perpetuating through the existing community college system. The public awareness campaigns will continue through the efforts of local organizations recruited during this grant. The State Subcommittee for Pediatric Emergency Care will seek a permanent financing mechanism for its oversight responsibilities by working with State EMS and MCH staff. Lessons learned from studying the impact of our activities in the target areas will permit further development of statewide provider and public educational initiatives and also permit the formation of an EMSC infrastructure in Tennessee.

Experience to Date

The organizational infrastructure of the project, the training course for trainers, and the preparation for the electronic bulletin board are in place. Training videotapes were produced in July 1995. The greatest challenge to date has been surmounting the slow bureaucratic pace of the initial requisite paperwork between a new administration in the State and the collaborating children's hospitals. We have worked through this and the project is now gaining momentum.



Tri-State Appalachian Alliance for Emergency Services for Children

Grantee
West Virginia University Research Corporation

Project Number MCH-544001

Project Period 10/01/92–09/30/96

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Problem

This project is a joint effort of Kentucky and West Virginia (with assistance from Ohio) to address the provision of emergency medical services for children (EMSC) in an isolated rural environment. Geographic isolation due to terrain and weather, low socioeconomic status, generally poor health in the study area, and high patient-to-physician ratios are some of the problems that exist in Appalachia. We are assessing the current status of our EMSC system and addressing barriers to the delivery of consistent, quality EMSC in rural Appalachia.

Goals and Objectives

The seven initial goals of the project are to:

1. Identify the special problems of EMSC in rural Appalachia;
2. Develop rural EMSC training programs and a continuing education curriculum;
3. Integrate pediatric practitioners into the emergency medical services (EMS) system;
4. Assemble statewide pediatric advisory committees to assist EMS squads and advisory councils;
5. Build community expertise in EMSC education in rural counties to lay the foundation for sustainable development;
6. Develop community interest in child injury prevention programs; and
7. Address the needs of children with special health needs in the EMS system.

Methodology

The Appalachian Alliance for EMSC consists of triads (representing various government agencies and health and service organizations within the three States) with a common concern for children in the EMS system. These triads have met to establish communication patterns. Epidemiological studies such as "sentinel case studies" (reviews of significant pediatric EMS and emergency department cases) and "pin-in-the-map simulations" are being performed to help determine the needs of the EMSC system. In addition, needs assessment sur-

veys are being performed in selected areas, and statistics on pediatric admissions to emergency departments are being compiled.

Consensus guidelines on EMSC training and continuing medical education are being developed, beginning with local squads involved in the focus group process and extending to various government and provider triads.

Local pediatricians are becoming involved in training efforts, and State pediatric advisory committees are meeting regularly.

PATCH groups or similar organizations in various counties have been actively sought out as the focal point for community support for EMS systems and for childhood injury prevention projects. The Ohio EMSC project team has participated in the transfer of relevant techniques and methods developed through their project. The focus group and nominal group processes, designed to foster community involvement, have been employed with initial success.

The medical passport system is being investigated in the Appalachian setting.

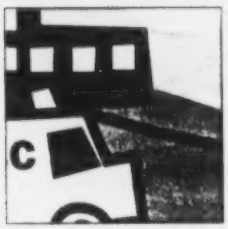
This project works with State health agencies (including EMS, maternal and child health, and children with special health needs) in Kentucky, West Virginia, and Ohio, and with organizations such as the American College of Emergency Physicians and the American Academy of Pediatrics to facilitate communication. At the local level, pediatric injury prevention education is promoted by approaching county health departments to access the community health network. The process is initiated by holding community focus groups to determine needs and foster interest in childhood injury prevention.

Evaluation

Baseline data are being gathered initially in the following areas: Status of the local system; training of emergency medical technicians (EMTs); staffing of emergency department; pediatric EMS equipment; linkages of the emergency medical services system, emergency departments, and referral centers; public information and education; and safety programs. These components will be monitored and reassessed periodically and at the end of the project, with special attention to sustainability of the advances. Differences in outcome from the sentinel case studies and pin-in-the-map simulations (to be repeated in year 3, after instituting the community-based training efforts) will also be used to evaluate the training efficacy. The medical passport system for children with special health needs will be evaluated by determining parents' perceptions of ease of access to the EMSC system.

Experience to Date

Action groups are formulating guidelines for region-specific criteria for pediatric prehospital training and resources, emergency department training, continuing education, and personnel and resource standards. The North Carolina EMSC project's prehospital training curriculum has been used for local community EMSC training. A curriculum has been developed for externships at pediatric tertiary care centers for nurses, EMTs, and paramedics. Community and EMS focus groups have been held in several areas to begin local initiatives. These focus groups have identified child abuse and parenting skills as areas of major concern in addition to our previously identified problem areas. Prehospital providers have identified training of our Appalachian EMS personnel, who are mostly volunteer, as their most important priority by two methodologies: The pin-in-the-map studies and the focus group interviews.



Wyoming EMSC Project: Implementation Phase

Grantee
Wyoming Office of Emergency Medical Services

Project Number MCJ-564001

Project Period 10/01/95–09/30/96

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Problem

Wyoming is a large, sparsely populated State that is faced with many challenges in developing a unified systems approach to pediatric medical care. Specialized training programs for pre-hospital care providers are not available, and training designed for physicians and nurses is sporadic, at best, with no focal point. Unintentional injury morbidity and mortality is higher than national averages, and subsets of causative factors including drinking, school injuries, and athletic injuries warrant attention. No formal ongoing injury prevention and control activities have been institutionalized as yet.

Goals and Objectives

The goals of the Wyoming EMSC project are to: Reduce the morbidity and mortality of Wyoming children, implement effective pediatric medical training programs for health practitioners, and establish formal childhood injury control initiatives.

Major objectives are to:

1. Continue to build the infrastructure of the Wyoming EMSC system by using the existing Pediatric Task Force and building upon it in communities through effective coalition building;
2. Plan and implement a data and surveillance system that will touch on many levels, or components, including school-site injuries, motor vehicle trauma, hospital trauma registries, and the ambulance trip reporting system;
3. Establish minimum pediatric standards and policies including treatment and triage protocols, pediatric equipment needs, facility categorization, and policies;
4. Implement broad-based training for pre-hospital as well as hospital providers by utilizing existing training programs that have been developed by other EMSC project grantees and those of major organizations such as the American Heart Association;
5. Develop projects to raise the awareness of school sport injuries among administrators and athletic coaching staffs; and
6. Target closed head injury problems in sporting events.

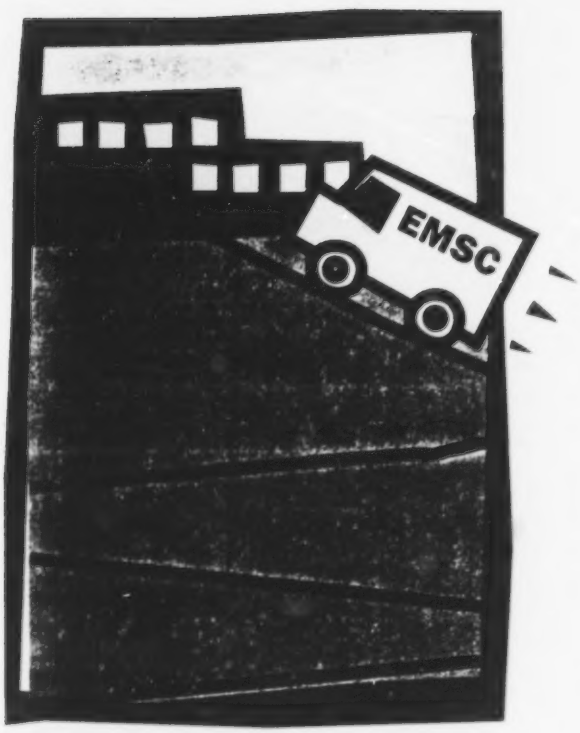
Methodology

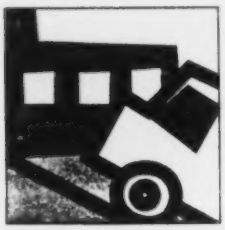
1. The Pediatric Task Force will continue to meet and facilitate activities and establish linkages among the participators, and the community coordinator will establish coalitions among health, school, and safety personnel in towns.
2. Data bases that are scattered among various agencies and organizations and internal data bases such as vital records will continue to be analyzed. The ambulance trip form will be modified to look specifically at pediatric issues. Trauma registry data from the major hospitals will be reviewed.
3. Pediatric standards from other EMSC projects will be used as templates as we adapt for our own State needs in all areas of policy and practice standards.
4. We will use both the Utah EMSC pre-hospital program and the current IVD computer program from Montana in lieu of expensive startup in State, and will actively support and revitalize the Pediatric Advanced Life Support training of the American Heart Association.
5. A data base of school injuries will be initiated, information will be transferred to appropriate administrators, and tracking will continue.
6. A program developed by our Regional Brain Injury Center will be used in schools around the State to focus on the mitigation of head injuries during sporting events.

Evaluation

1. Process objective measurements of participation, attendance, and increases in collaborating partners will be used for system enhancement;
2. Meaningful data collection, analysis, and dissemination of the information will be used as an evaluation tool for the data and surveillance component;
3. The promulgation of protocols to field providers, and the inclusion of pediatric issues into the current State trauma plan will be evaluation measures;
4. Process measures of attendance and test scores will be evaluated in training areas;
5. Collection of injury data on school sites and dissemination of information that is meaningful and used to affect change will be evaluation tools of school initiatives; and
6. Student and coach evaluation forms, the percent of athletes viewing our prevention programs, and schools participating will all be measurement tools.

System Enhancement Grants





Emergency Medical Services for Children Targeted Injury Prevention

Grantee
Alaska Department of Health and Social Services

Project Number MCH-024002

Project Period 10/01/94–09/30/96

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Problem

A high rate of childhood injury in Alaska is confirmed by epidemiological studies. *Childhood Injury, State by State Mortality Facts*, a study by the Johns Hopkins Injury Prevention Center, rated Alaska as the State with the highest childhood injury death rate for children ages 0–14; a rate of 35 per 100,000 per year versus the national average of 19 per 100,000 per year. A 10-year study of deaths in Alaska from 1980 to 1989 by the Alaska Section of Epidemiology found that 84 percent of deaths among children and youth ages 5–19 were the result of injury.

In addition, a study of Anchorage hospitals in 1990 revealed that for every childhood injury death 40 children were hospitalized with injuries and 984 children were treated in emergency departments. This study indicates that children hospitalized with injuries are the "tip of the iceberg" of the total childhood injury picture.

A closer look at childhood injuries in Alaska reveals patterns, trends, and unusually high rates for specific types of injuries among specific age groups in certain regions. Significantly, specific types of injury deaths among certain age groups of children have decreased in Alaska in recent years, while others have increased.

Goals and Objectives

The goal of this project is to implement effective childhood injury prevention strategies among children at greatest risk for specific injuries as identified through the Alaska Trauma Registry and by injury fatality records.

The objectives are to:

1. Determine what types of childhood injuries in certain Alaskan regions are increasing in severity or frequency, or are continuing to occur at a significantly higher rate than the national average for each age group;
2. Identify an effective childhood injury prevention program (or develop one, if none exists) for each type of injury identified by the serious injury and mortality data for the targeted population of children at greatest

risk of specific injuries within certain Alaskan regions;

3. Adapt the identified effective injury prevention program for each age group targeted within a region, and implement a program using persons knowledgeable in injury prevention strategies, including emergency medical services (EMS) providers in each region;
4. Increase the number of EMS providers trained to implement injury prevention programs in each targeted region; and
5. By 1996, decrease by 50 percent the number of serious injuries and injury fatalities in the regions receiving injury prevention programs for the age groups identified at greatest risk of injury.

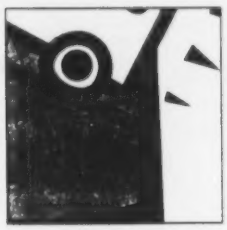
Methodology

The Alaska State EMS Section, Division of Public Health, Department of Health and Social Services, is based in Juneau, and consists of eight professional and two support staff.

Alaska EMS Section staff will analyze data on childhood injuries in Alaska to determine patterns of hospitalized injuries for various age groups of children; rates of injury; and types, circumstances, and seriousness of injuries in State regions. Staff will then gather relevant injury prevention materials and information about activities developed by other EMSC projects and national or international resources. Where no relevant or effective injury prevention materials or strategies exist, staff will work with other State agencies, EMS personnel, and community members to develop them. Once materials and strategies are available, injury prevention training will be provided to local EMS personnel, who in turn will work with other health care providers, teachers, and child care providers in their regions to implement injury prevention projects developed specifically for targeted populations.

Evaluation

The Alaska Trauma Registry coordinator will obtain and analyze data regarding specific injuries targeted in each region where a project is implemented. In addition, each project will gather baseline data for the region targeted and will be responsible for monitoring the results of project activities.



Arizona EMSC Enhancement Project

Grantee
University of Arizona

Project Number MCH-044002

Project Period 10/01/95–09/30/97

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Problem

Arizona has some of the highest rates for trauma mortality, unintentional injury, and drowning in the country. Typically these injury patterns impact the pediatric population most severely, significantly affecting the number of years of productive life for many children. This serious public health problem necessitates an evaluation and improvement in the emergency medical services (EMS) available to these patients. In addition to improving available care, an emphasis must be placed on developing programs to prevent these injuries. Reduction in trauma and unintentional injury rates in this population will affect long-term health care costs to both individuals and society.

The maturing and enhancement of Arizona emergency medical services for children (EMSC) has developed to the point that numerous specific target issues and populations can be addressed. During the last 2-1/2 years we have identified the following problems as needing significant interventions: A complete lack of neonatal and perinatal curriculums and education for EMS health care providers; a lack of pediatric triage and transport guidelines that extend statewide; the lack of a statewide approach to the prevention of childhood burns; an enormous increase in juvenile arson; a complete absence of curriculums and education about the care of children with special health needs (CSHN) for EMS health care providers; and a need for EMSC legislation.

Goals and Objectives

The project goal is to expand programs that address problems specific to the pediatric population. Activities to enhance previous EMSC education include:

1. Prehospital and emergency department neonatal and perinatal training;
2. Statewide pediatric triage and transport guidelines;
3. Adopt-a-School Life and Fire Safety Project;
4. Clowning and Puppetry—Fire and Life Safety Characterization College;
5. Juvenile Fire Setter Program;

6. Prehospital education in the emergency care of children with special health needs; and
7. Legislation.

Methodology

Under the the direction of the project director, the personnel involved in the enhancement project will implement the goals and objectives as stated above. Norma Battaglia, who has extensive neonatal, perinatal, and EMS experience, will be primarily responsible for helping to establish the Office of Perinatal/Neonatal Health Education, which will be a joint function between the EMSC project and the Arizona Office of Women and Children's Health. Curriculums will be developed and training programs throughout the State will occur.

Project personnel will be actively involved in the development of statewide pediatric triage and transport guidelines. Both Cindy Rutter and Norma Battaglia will be primarily responsible for this undertaking.

The current family-centered curriculums available for the care of CSHN will be adapted for training of EMS health care providers. After this adaptation, training programs will be delivered statewide.

The current Adopt-a-School Life and Fire Safety Project (well-developed by the Tucson Fire Department Community Services Division) will be further enhanced, adapted, and expanded into a statewide program. This will provide dozens of EMS agencies around the State that can be involved in school-based prevention programs.

Under the auspices of the project director, the EMSC coordinator, and the Tucson Fire Department, a Characterization College will be developed to teach EMS personnel how to educate children on fire and life safety issues through clowning and puppetry. This project will provide for education of EMS personnel from all over the State.

A pilot project will be developed by the Tucson Fire Department in an attempt to curb juvenile fire setting. If the project is successful in decreasing juvenile arson, the program will be expanded to other areas of the State.

The EMSC project personnel will continue efforts to get EMSC legislation passed for the State of Arizona.

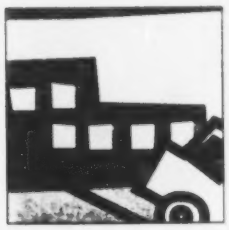
Evaluation

The evaluation of curriculum development and adaptations for perinatal/neonatal curriculums development, Adopt-a-School Life and Fire Safety curriculum expansion, Clowning and Puppetry Characterization College curriculum development, and CSHN needs curriculum development will all be under the auspices of the project medical director. Start and completion dates for each task are already developed. Tracking methodologies that evaluate assignments, schedules, reports, and drafts will be carefully monitored by the project coordinator.

Educational offerings for perinatal/neonatal, Adopt-a-School Life and Fire Safety, Clowning and Puppetry, Juvenile Fire Setter programs, and CSHN will occur via development and tracking of master schedules and attendance rosters, and evaluation of impact of these programs will occur via a pretest/posttest methodology.

The development of pediatric and transport guidelines will involve the tracking of the development of the multidisciplinary task force and will be tracked by quarterly reports.

Evaluation of the impact of the Juvenile Fire Setter program will involve the identification of the impact, if any, on the incidence of juvenile arson within the city of Tucson. If the process is successful, additional programs will be developed and their impact will be evaluated in other parts of the State.



Emergency Medical Services for Children System Enhancements

Grantee
Hawaii State Department of Health

Project Number MCH-154002

Project Period 10/01/95–09/30/97

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Problem

Hawaii needs an emergency medical services for children (EMSC) plan that stresses primary care provider and family involvement throughout a continuum of care for children. We need to identify ongoing leadership in developing and monitoring our EMSC system, with given resources, to support integration of EMSC components into the existing Emergency Medical Services System (EMSS). Hawaii's EMSC system needs to respond to and transfer critical care pediatric patients, including those children with special health needs (CSHN), in a timely manner. Data collected in the Hawaii Trauma System Study indicate median transfer time from outlying hospitals on Oahu to designated trauma centers is 3 hours 15 minutes; from neighbor island hospitals, it is 6 hours 40 minutes. To respond appropriately to CSHN, paramedics and other first responders need significant medical information about the child. EMSS's quality improvement (QI) program has identified an increase in medical emergencies where paramedics respond to children on ventilators, apneic/heart monitors, and feeding tubes and have difficulty in obtaining a clear medical history appropriate for medical care at the scene and during transport. This QI program measures, maintains, and improves the effectiveness and efficiency of EMSS, though it does not currently generate information specific to pediatric patients. Program modifications are necessary to obtain both the baseline and outcomes data necessary to measure performance.

Goals and Objectives

The project goal is a functioning EMSC system that (1) provides for a continuum of care from primary prevention and education to rehabilitation through the primary care provider and the family, and (2) ensures access to prehospital and interhospital critical care and transport appropriate to the needs of pediatric patients, including CSHN.

Objectives are to:

1. Formalize a written EMSC system plan, based on Hawaii's medical home model, that outlines strategies for system development and monitoring;
2. Increase at school health service centers, primary care clinics, and Native Hawaiian

health centers the number of pediatricians and primary caregivers who adopt behaviors consistent with the role of the medical home in Hawaii's EMSC system;

3. Strengthen existing resources to support the development and improvement of Hawaii's EMSC system;
4. Integrate pediatric criteria into the existing EMSS QI program;
5. Establish a regionalized system of pediatric emergency care that supports coordination of pediatric referrals and transports;
6. Adopt and integrate standards for prehospital triage, field treatment, and critical care transport into existing EMSS; and
7. Extend E-911 services, as appropriate, to children receiving the services of the CSHN branch.

Methodology

The EMSC advisory council and project personnel are the focal point from which activities are conducted. The council will finalize and adopt a written EMSC plan based on the medical home model. A brochure on Hawaii's EMSC system, the concept of the medical home, and the roles of provider and family will be produced. Project personnel and council members will conduct presentations on the EMSC/medical home concept to organizations they represent at regularly scheduled meetings or other forums. The brochure will be disseminated at presentations and to identified organizations through council members and project personnel. In year 2, the EMSS branch will have a full-time permanent State critical care coordinator position that will administer project activities and, as an integral component of the State EMSS, provide continued monitoring and improvement of the EMSC system. The EMSS branch chief has authority to integrate pediatric criteria into the EMSS QI program and will do so. A data specialist will make necessary program changes to existing data bases so appropriate information on pediatric patients can be obtained. Pediatricians and emergency physicians will conduct visits to acute care hospitals, categorizing facilities by resources and capabilities to provide emergency pediatric care in accordance with EDAP criteria. Categorization is the basis for establishment and adoption of written prehospital and interfacility triage and transfer protocols. *EMS for Children: EMSC Development and Integration of Pediatric Emergency Care into EMS Systems* (from the California EMSC project) will be used in establishing a regionalized system. With FHSD, parents, and police central 911 communication centers, appropriate medical information on CSHN will be gathered and entered into the existing E-911 system.

Evaluation

AAP and HMA will conduct a survey of primary care physicians and providers before and after EMSC presentations and brochure dissemination to determine the number aware of EMSC and active as a medical home. FHSD will receive, via a tear-off questionnaire on the brochure, feedback on who uses the brochure, where they got it, and whether they understand and assume an appropriate role in the medical home model. Retrospective and prospective transfer data will be used to evaluate effectiveness of pediatric triage and transportation guidelines and E-911 services. Reports of frequency, medical condition, transport time, and treatment/procedures with discharge status for pediatric trauma patients as well as reports from the surveys and questionnaire will be generated and used by the advisory council and State EMS medical directors to improve EMSC.

Maryland System Enhancement for EMSC Programs

Grantee
University of Maryland at Baltimore

Project Number MCH-244002

Project Period 10/01/94–09/30/96

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Problem

Maryland's emergency medical services (EMS) system already includes a pediatric trauma system, a neonatal transport program, and specialty care components (burn, cardiac, eye, hand, hyperbaric medicine, neurotrauma, and high-risk perinatal). These components are all part of the State-funded Maryland Institute for Emergency Medical Services Systems (MIEMSS). MIEMSS is responsible for the designation of trauma and specialty centers; the training certification of more than 31,000 prehospital providers; the operation of a statewide EMS communications system; and the coordination of transportation, planning, and system evaluation. The addition of an emergency medical services for children (EMSC) component to address life-threatening illnesses in children is a much-needed evolution of the EMS system and one that can be easily integrated into existing structure.

Goals and Objectives

Goals and objectives are to:

1. Create a forum for ongoing communication to identify issues related to pediatric emergency care services and the strengths and weaknesses within each of the five EMS regions and the State of Maryland.

   Objectives:

   a. Establish, in each of Maryland's five EMS regions, a pediatric advisory committee consisting of professional and community members with a strong commitment to emergency care for children. These committees will be chaired by the regional pediatric emergency medical directors.

   b. Assess regional resources and strengths, including educational programs that are successful; potential pediatric faculty; injury prevention activities for children and families; quality management systems; available data on childhood illness and injury in each prehospital jurisdiction; and emergency departments.

c. Identify and prioritize current issues in the delivery of quality pediatric EMS care along the continuum in each of the five regions. Delineate common issues and problems among regions as well as the unique issues within a specific region and/or jurisdiction.

2. Define the pediatric capabilities of emergency departments in each of the five EMS regions, including professional resources, education, quality improvement, data bases and data management systems; and reevaluate the equipment and pharmacological resources surveyed in the first Maryland EMSC grant period.

   Objectives:

   a. Establish a steering group to select the emergency department survey tool on the basis of the experiences of other EMSC grant projects and recommend the format for the survey to be conducted in Maryland. Survey all 49 emergency departments in Maryland.

   b. Review the existing guidelines for pediatric emergency care along the continuum and, with the steering group, develop pediatric guidelines for review in each of the five EMS regions. Guidelines will include prehospital basic life support and advanced life support equipment, emergency department equipment, a prehospital pediatric emergency triage system, pediatric education and training for both prehospital and hospital professionals, emergency department personnel resources for all levels of pediatric commitment, and public education programs directed toward children and families.

   c. Make available, in year 2 of the project, resources and guidelines for pediatric capabilities for emergency departments through the MIEMSS Office of Children's Programs. It is anticipated that the identification of facilities appropriate for pediatrics on a regional and statewide basis will begin during year 2 of the grant period and continue within the overall mandate of MIEMSS.

Methodology

The processes of delineating the needs for pediatric emergency care and then translating them to a statewide enhancement program have been facilitated by the appointment of the Pediatric Emergency Medical Directors Advisory Group. This Advisory Group has had organizational meetings and consists of designated leaders in pediatric emergency care in all five regions of the State EMS system. Advisory Group members have been actively involved in the planning and development of this enhancement project. The Advisory Group has identified the need to establish pediatric guidelines for emergency care in the prehospital and hospital environments. The members also plan to form regional pediatric committees that will be interdisciplinary and reflect the specific issues in each region. The last component of the project is to formulate and distribute a comprehensive survey of current pediatric EMS to the 49 emergency departments throughout the State of Maryland.

Evaluation

The material from the survey will be collated and analyzed by the Pediatric Emergency Medical Directors Advisory Group. This survey will be used as a baseline to implement programs for identifying

emergency departments that are appropriate for pediatric emergency care (so-called EDAPs) throughout the State. Furthermore, this information will be used to enhance educational programs and to help establish appropriate standards for care, including facilities, personnel resources, prehospital triage, and equipment for emergency care for children with life-threatening illnesses and injuries throughout the State.

Experience to Date

During the first 6 months of the EMSC grant, the region pediatric subcommittees in Regions III, IV, and V set up a regular meeting schedule and identified priorities for the 1995 year. Regions I and II pediatric medical directors have been reappointed, and the identified educational priorities have been incorporated into conference schedules for 1995. The statewide issues forums held in the development of a State EMS plan have been reviewed and the pediatric issues identified in each region. During the first 6 months of the grant period, PEMAG's agenda was focused on the revision of advanced life support protocols and the development of basic life support guidelines with the State adult medical directors. The grant timeline for the development of the EMSC Survey for Emergency Departments has been adjusted accordingly. While there is a delay in the initial timeline, this time has afforded the regional pediatric subcommittees' review and comment. It is anticipated that the end result will be a survey that is well received and reflects the current pediatric experience in Maryland EMS.

Michigan's Pediatric Emergency Development System (M-PEDS)

Grantee
Michigan Department
of Public Health and
the University of Michigan

Project Number MCH-264002

Project Period 10/01/94–09/30/96

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Problem

The Michigan Department of Public Health (MDPH), Division of Emergency Medical Services (EMS), has statutory authority for the development of the prehospital emergency medical service system in the State. Current legislation provides the Division of EMS with the authority to plan, evaluate, and regulate the prehospital care system, license all levels of prehospital care providers and personnel, and establish local MCAs and patient care protocols.

Under the provisions of the act, hospitals within each MCA region are required to establish systems whereby quality of and access to prehospital care are developed through local treatment protocols (based on State guidelines). These guidelines include prehospital treatment, triage, communications, and transportation criteria. The division approves these systems and protocols. MCAs monitor these activities through a quality assurance process.

The Division of EMS is also responsible for the development of an inventory program that identifies hospitals that have specialty care capability and those that meet applicable Federal and State standards for trauma designation, and for the development of categorization criteria for emergency departments.

The division is divided into three sections—Personnel, Operations, and Trauma. The structural organization of the Division of EMS, which encompasses a combination of centralized authority and delegated local enforcement, is an ideal model for the implementation of innovations and improvements in the system.

Goals and Objectives

The short-term goal of the project is to develop and pilot a system of emergency medical services for children (EMSC) in three rural northern Michigan MCAs that have limited access to pediatric specialty and critical care. The long-term goal is to implement the pilot project throughout Michigan, forming a statewide EMSC system that provides optimal pediatric emergency care.

The objectives are to:

1. Develop standards for prehospital and hospital providers of pediatric emergency care within the study area;
2. Develop and implement a continuing education program, which will use mock scenarios to test skill acquisition or deterioration, for prehospital- and hospital-based providers;
3. Develop prehospital and hospital equipment and supply standards and a tool for measuring equipment and supply use; and
4. Implement the pilot EMSC program statewide (a long-term objective that extends beyond the project period).

Methodology

The four objectives will be carried out as follows:

Objective 1: A committee will be formed of representatives of the project investigators, MDPH/Division of EMS, and prehospital and hospital providers from the study area. This committee will develop guidelines and standards for the delivery of optimal emergency care for pediatric patients within the various components of the existing EMS system. Methods for each component of the EMS system are as follows:

Prehospital. Pediatric triage protocols will be developed. Pediatric patient care protocols will be implemented. Standards for pediatric equipment and supplies will be developed and implemented.

Rural hospital. Standards will be developed for the categorization of Michigan rural hospital emergency departments approved for pediatrics (MiREDAP), including staffing, staff education, equipment, and supplies.

Interhospital transfers. Hospitals throughout the State of Michigan will be accessed and classified as to their ability to care for critically ill and injured children in order to match patient needs to hospital resources and, in addition, limit transfer distances if possible. Transfer agreements will be obtained between transferring and receiving hospitals following the recommendations of the grant committee.

Objective 2: An educational program will integrate existing courses and curriculums for EMSC with a continuing education and assessment component including mock codes to address some problematic issues in current pediatric EMS training. An objective structured clinical examination (OSCE) format will be used to evaluate the proposed educational program.

Objective 3: An equipment and supply standard will be developed. This standard will be adapted from existing lists from past EMSC studies to address the needs of Michigan's rural pediatric emergencies in both the prehospital and the emergency department settings (with emphasis on trauma, respiratory distress, and seizures). Existing prehospital equipment will be updated to meet this standard. Hospitals participating as MiREDAP facilities will be required to update to this standard or to develop a plan and timeframe for meeting this standard.

Objective 4: Concurrent with the development of the pilot EMSC program, the committee will begin discussing mechanisms for implementing the program on a statewide basis.

Evaluation

Evaluation will occur as follows:

Objective 1: Prehospital. Pediatric triage and patient care protocols will be evaluated by the MCA, using the existing quality assurance (QA) process. The QA process will be reviewed on a periodic basis, and modifications will be made as needed. The equipment and supply standard will

be evaluated by means of a use analysis and by the mock code/scenario special education program.

Rural hospital. Staff education and skill level will be evaluated by the mock code/scenario special education program. The equipment and supply standard will be evaluated by means of a use analysis and by the mock code/scenario special education program. Staffing will be monitored by hospital administration under the direction of MDPH/Division of EMS.

Interhospital transfers. To assess compliance with interhospital transfer policies and agreements, a QA process will be developed to review all pediatric patients transferred from rural hospitals in the study area to specialized pediatric care facilities. This includes transfers from the inpatient units as well as directly from the emergency department. A panel with expertise in pediatric emergency medicine will be formed to evaluate the medical records for all transferred patients. This panel will be composed of emergency physicians, nurses, and prehospital providers. Panel members will review and score the records independently and will be blinded to date, county, and patient outcome.

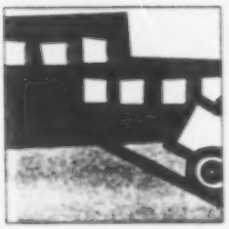
Objective 2: For each scenario, critical interventions will be developed. In addition, participants will need to demonstrate the availability of equipment and its proper use during each scenario. The first OSCE will be conducted prior to any educational intervention and this will be a baseline skill measurement. Following the baseline measurement, the pediatric prehospital course and pediatric advanced life support course will be given. Each course will be modified by the addition of material tested in the OSCE. Following this baseline educational program, the OSCE will be conducted at varying time intervals for each MCA. Improvements and degradation in performance will be measured.

Objective 3: Compliance with the equipment and supplies standard will be monitored on a regular basis. A monitoring tool will be developed in conjunction with the mock code/scenario special educational program. During the mock codes, providers will have to demonstrate the availability of equipment as well as proper use. A use analysis will be performed on the equipment and supply standard in both the prehospital and the emergency department settings. Prehospital data will be collected on equipment and supplies used during all transports of infants, children, and adolescents.

Objective 4: For the statewide program, the evaluation processes developed for the pilot program (objective 1) will be implemented within each MCA. The MCA, MDPH/Division of EMS, and the EMSC Committee will coordinate this effort.

Experience to Date

Training programs have been well received although more expensive than planned. Hospital and prehospital standards have been developed using existing national standards with local modification. Medical control authorities and hospital groups have been receptive and provide significant ongoing support to grant objectives.



Southwestern Illinois–St. Louis (SISL) Bistate Regional EMSC Project

Grantee
Washington University
School of Medicine

Project Number MCH-294003

Project Period 10/01/94–09/30/96

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Problem

The Mississippi River defines the State boundaries between Missouri and Illinois and clearly divides the St. Louis bistate metropolitan region with both a geophysical and a psychological barrier. These barriers become problematic for the 140,000 children of southwestern Illinois who rely on the two pediatric hospitals in adjacent St. Louis, MO, for their tertiary trauma and medical care. Because of the State boundary, many of the Missouri activities and system changes connected with emergency medical services for children (EMSC) have not been implemented in adjacent southwestern Illinois.

Goals and Objectives

The Southwestern Illinois-St. Louis (SISL) Bistate Regional EMSC Project is a collaborative project with health care providers in southwestern Illinois and St. Louis, MO. The goals are to:

1. Enhance the ability of the existing emergency medical services (EMS) and health care system in southwestern Illinois to respond to ill and injured children with rapid, integrated, and skillful care at all EMS system levels and to facilitate the entry of these children into a bistate regional EMSC system;
2. Address, and suggest solutions to, challenges and problems specific to developing and administering a bistate regional EMSC system; and
3. Provide a coalition prototype applicable for use in other multistate EMSC regional systems.

Methodology

The Southwestern Illinois EMSC Coalition Subproject will develop: (1) Broad, community-based support for coalition activities; (2) an organizational structure for a regional EMSC coalition to plan and oversee the SISL subprojects and to provide a mechanism within the coalition to address EMSC local, bistate-regional, and statewide issues; and (3) a methodology to use existing and new data

sources to describe and evaluate outcome, thus facilitating tracking of SISL project goals and objectives.

The primary care physician (PCP) outreach subproject will: (1) Develop and implement a survey and assessment tool to establish a data base of existing primary care resources and to evaluate primary care physicians' current capabilities and needs with regard to EMSC issues; (2) develop outreach and education mechanisms customized to primary care and pediatric emergency medicine issues; (3) develop a mechanism to clarify the role of southwestern Illinois general hospitals and emergency departments in pediatric care along with guidelines to improve access and appropriate referrals to these facilities; (4) develop guidelines to improve access and appropriate referrals to the specialized tertiary care pediatric resources in St. Louis; and (5) link PCPs with the Southwestern Illinois EMSC Coalition.

The emergency nursing education outreach subproject will: (1) Provide outreach and education through enhanced access to existing specialized training programs available through the Emergency Nurses Association (ENA); (2) develop a mechanism for these health care providers to assume leadership roles in developing health care policies that will lead to expanded pediatric capacity at all levels of the EMSC system; and (3) link the emergency nurses with the Southwestern Illinois EMSC Coalition.

The pediatric advanced life support (PALS) education outreach will: (1) Provide a core of PALS instructors from southwestern Illinois consisting of physicians, nurses, and/or paramedics who will be trained as PALS providers, then as PALS instructors; (2) provide onsite PALS courses in southwestern Illinois; (3) provide access to these PALS courses through scholarships; (4) develop a mechanism whereby these health care providers can subsequently assume leadership roles in developing health care policies; and (5) link emergency medical technicians-paramedics and emergency department physicians and nurses with the Southwestern Illinois EMSC Coalition.

Evaluation

Lay and health care professionals' quarterly participation in EMSC coalition activities will be tracked and reviewed. A survey tool will track, on an annual basis, the impact on regional and statewide EMSC issues among coalition participants and lay community health care professionals. Descriptive statistics will evaluate data from the PCP survey and the assessment tool. The pretest and posttest format will measure changes of outreach programs. Descriptive statistics will be used to describe the nurse population in each ENA course, and a gross-measure-of-comfort pretest and posttest course will be developed and measured. This information will serve as pilot data in a larger population sample to clarify questions necessary for further analysis of similarities, differences, and outcome benefits for these two courses. Pretest and posttest knowledge and level of comfort will be evaluated for participants in PALS courses. Pretest and posttest case scenario management will be evaluated at PALS course time and repeated 1 and 2 years after PALS training to examine "extinction of skills" parameters.

Experience to Date

This project has been well received in the target area. Grassroots support building for the SISL EMSC Coalition is progressing well. A strong working relationship has been established with the Illinois EMSC project. Planning and development of outcome evaluation measures are underway. Outreach educational courses have been scheduled and scholarship enrollment is underway.

Nevada EMSC State System Enhancement Grant

Grantee
University of Nevada

Project Number MCH-324002

Project Period 10/01/94–09/30/96

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Problem

An effective system for collecting, processing, and analyzing data is an essential feature of quality emergency medical services for children (EMSC). Indeed, the recent Institute of Medicine (IOM) report on EMSC emphasized the importance of system surveillance and information management. To be most useful, information management systems should address collection and linkage of data at all points along the EMSC continuum of care. According to the IOM report, these data should also include all elements of a uniform national data set.

The major goal of the surveillance component of the current Nevada EMSC implementation project (1991–94) has been to establish an electronic linkage between two components of EMSC data—prehospital "run" reports and corresponding hospital discharge records—stored in separate data bases. Despite the achievement of this goal, several deficiencies and problems remain in the area of EMSC information management.

1. The common prehospital data set (i.e., EMSC Research Dataset) selected in 1991 and used thus far to abstract prehospital data for linkage with hospital discharge records has minimal prehospital clinical content and limited national recognition.
2. The State's hospital discharge data set (i.e., the Health Care Financing Administration's UB–92) is financially oriented and limited in its clinical usefulness for tracking patient outcomes.
3. The only other automated emergency medical services (EMS) data base, the State trauma registry, does not include data on critical illness or minor trauma cases.
4. Currently no uniform automated emergency department data base that would allow aggregation of EMSC data on emergency department services is used by hospitals in Nevada.
5. A uniform interstate data set that would allow data base linkages across State lines to track Nevada's interstate EMSC activities does not exist.
6. Other than the State trauma registry, Nevada has no EMS information system that records

data on ethnic origin or prior health status; consequently, EMSC among ethnic minority groups and children with special health needs is particularly difficult to evaluate and plan.

These problems retard the process of quality management, system planning, resource allocation, research, and development of strategies for pediatric injury and illness prevention.

Goals and Objectives

This project takes the next steps toward establishment of a comprehensive, clinically relevant information management system for Nevada EMSC.

The project will:

1. Implement an expanded, standardized EMSC prehospital data set, based on the National Highway Traffic Safety Administration (NHTSA) Uniform Prehospital Dataset (UPD), in Nevada's two major population centers;
2. Maintain the current statewide linkage between the EMSC prehospital data base and the hospital discharge data base;
3. Develop and generate clinically relevant reports for EMS providers and agencies based on data contained in the linked EMSC records;
4. Develop recommendations for State health planners through the Center for Public Data Research (CPDR) for augmentation of the hospital discharge data set to include additional outcome data for pediatric patients; and
5. Develop recommendations for State health planners on the implementation of a statewide system for collecting, storing, and processing information on emergency department services provided to children (i.e., a pediatric emergency department data base).

Methodology

The University of Nevada School of Medicine (Reno) will serve as lead agency for the Emergency Medical Services for Children System Enhancement Project. This project will be undertaken in consultation with Nevada's State and urban county EMS offices.

EMSC staff will modify the current EMSC prehospital data set used for linkage with the hospital discharge data base in three collaborating prehospital agencies representing 85 percent of the State's pediatric ambulance runs. The new EMSC prehospital data set will coincide with the recently developed NHTSA Uniform Prehospital Dataset. CPDR will provide the technical expertise necessary to configure the new prehospital data set. Using the matching program developed previously, EMSC and CPDR staff will ensure the preservation of linkage between the new prehospital data set and the State's hospital discharge records maintained by the CPDR. At this point, the EMSC and CPDR staff will also ensure maintenance of the linkage with the State EMS office's prehospital records for the rural Nevada communities; this will be accomplished in consultation with the State EMS Office, which has already implemented an early version of the UPD for its prehospital data management system. CPDR and EMSC staff will configure at least six standard reports summarizing the prehospital and hospital discharge data based on input from prehospital providers.

EMSC staff will develop a work group on discharge data base modification. This work group will meet during the course of the project and develop recommendations for changing the hospital discharge data base to include additional, clinically relevant data on pediatric outcomes. These recommendations will be directed to the State Department of Human Resources for action through the CPDR.

EMSC staff will also organize a work group on emergency department data base development. Using examples obtained from project consultants and other EMSC projects, this work group will develop a plan for a pediatric-oriented emergency department data base and its implementation statewide. These recommendations will be directed to the State Department of Human Resources for action.

Evaluation

EMSC staff and the P1 team will monitor progress in consultation with the project's advisory committee. Satisfactory progress will be identified in the following ways:

1. Demonstration of the essential elements of the UPD on review of the prehospital data base records at the three pilot agencies.
2. The ability of CPDR to link prehospital and hospital discharge records accurately on at least 90 percent of pediatric prehospital runs resulting in hospital admissions statewide. EMSC staff will ensure accuracy of record matches and nonmatches by a random manual record review.
3. Generation of at least six standard reports by CPDR based on the combined data base records.
4. Delivery of the EMSC recommendations to the Department of Human Resources for action.

Experience to Date

Progress has been made in the following areas corresponding to each of the project goals and objectives:

1. Area of focus related to combined prehospital and hospital discharge record:
   a. Comparisons of existing prehospital data sets and field definitions with the UPD have been completed;
   b. Modification of the existing data collection tools has begun;
   c. A work group has been identified to assist in the formation of clinically relevant standard reports; and
   d. The Center for Public Data Research has consulted with prehospital agencies to evaluate electronic storage capabilities.
2. Area of focus related to the enhancement of the hospital discharge data base:
   a. Project staff have reviewed various emergency department data sets and outcome measurement tools; and
   b. Project staff have identified a work group for the emergency department data base.
3. Area of focus related to enhancement of the hospital discharge data set:
   a. EMSC staff have reviewed the Nevada UB-92 data set;
   b. Project staff have identified the hospital discharge data set work group; and
   c. Project staff have contacted other resources for additional outcome and recommendations.

New Hampshire Emergency Medical Services for Children Enhancement

Grantee
Dartmouth College

Project Number MCH-334002

Project Period 10/01/94–09/30/96

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Problem

New Hampshire's emergency medical services (EMS) system reflects the State's predominantly rural character, population distribution, tradition of rugged individualism, and desire for limited governance. The EMS system is highly decentralized, relying on grassroots town support for its survival and growth. No statewide or regional quality improvement occurs because no statewide data collection system is functioning. Hospital categorization and specialty trauma center designation are fragmented, and no integrated statewide trauma system exists. New Hampshire's emergency medical personnel have not had any training on the health care requirements for chronically ill children and children with special health needs (CSHN) living in their response areas. Neither have any linkages been forged between emergency medical services for children (EMSC) and the health care services for chronically ill children, based either at home or in the community. School nurses are inadequately prepared for pediatric emergencies, and neither school nurses nor coaches of children up to ninth grade have received any organized emergency education. Public access to EMS is primarily by unique ambulance telephone numbers; only 21 of New Hampshire's towns currently have 911. Information regarding injury prevention programs and supporting resources is not readily available to local EMS squads.

Goals and Objectives

Project goals are to:

1. Improve the provision of EMS to children with special health needs;
2. Enhance the provision of EMS by standardizing treatment and triage protocols and integrating these standards into the existing EMS system;
3. Link EMS and the public school health care system; and
4. Promote children's public information and education programs.

Methodology

The New Hampshire EMSC will organize a statewide committee. A CSHN emergency response program and a CSHN educational program for prehospital care providers will be developed and distributed.

We will gain pediatric representation on the EMS Medical Advisory Committee. Pediatric treatment standards and triage guidelines will be adopted and introduced into the existing educational system.

Elementary schools will be surveyed to determine the number of personnel trained to respond to pediatric emergencies, the availability and contents of first-aid kits, and the existence of protocols for response to emergencies. A pediatric emergency care training course will be developed for school personnel and EMS providers will be trained to teach courses in local schools.

An EMS access program for children will be developed and EMS providers will be trained to use the program and associated materials in their local communities. A public information and education resource guide for New Hampshire EMS providers, identifying educational programs and resource organizations and materials for injury prevention, will be published.

Evaluation

The CSHN program will be monitored through reports of data collection results; minutes from coordinating meetings; the number of promotional packets distributed; evaluation forms completed by the children's parents; review of pretests and posttests; and participant feedback from the educational program.

Improvements in the standardization of EMSC treatment and triage protocols and the integration of these standards into the EMS system will be tracked by the formal adoption of the protocols; the naming of a pediatrician to the EMS Medical Advisory Committee; the number of algorithm cards distributed; the administering of examinations before and after the instructor course; participant evaluation questionnaires; the number of course directors contacted after the educational program; and a survey of providers' familiarity with and awareness of the protocols.

Improvement of the linkages between EMS and the public school system will be evaluated through the report and response rate of the survey; the number of participants in the educational program; and the pretests and posttests of the participants in the educational program and the course evaluations.

The public information and education programs for children will be evaluated by the number of participants reached, participant evaluations, and the number of resource guides distributed.

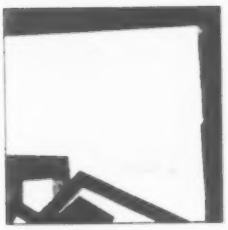
Experience to Date

Progress has been achieved in the following areas:

1. Children with special health needs: Three sites have been identified for implementation of the CSHN program. Children have been identified and program components are nearing completion. A resource guide has been compiled for use by families, schools, and EMS providers. Additional time has been invested in preliminary work because of the diverse and uncoordinated services for the CSHN population.
2. Standardizing protocols: Pediatric representation on the EMS medical committee has been approved as advisory only (due to membership restrictions). Protocol adoption

has been delayed due to position vacancies in the lead EMS agency. Instructor workshops will be held in year 2 by request of the lead EMS agency.

3. Public school linkages: A school survey has been developed and will be sent to all school nurses. New Hampshire school nurses have selected the University of Connecticut school nurse educational program for use in the State of New Hampshire; up to 10 instructors will be sent to the University of Connecticut's Instructor program. An educational program for other school personnel will be developed and utilized.
4. Public information and education for children: A program for children has been developed and evaluated. Materials will be distributed to providers, and a resource guide is in process.



North Carolina Emergency Medical Services for Children Enhancement Project

Grantee
North Carolina Office of
Emergency Medical Services

Project Number MCH-374002

Project Period 10/01/95–09/30/97

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Problem

The North Carolina Emergency Medical Services for Children (EMSC) Task Force has recognized that, in addition to prehospital and emergency department providers, primary care providers are vitally important members of the EMSC system. However, these providers sometimes lack up-to-date resuscitation skills, and they may not have pediatric-specific protocols and equipment at their practice sites. Providers may also be unfamiliar with the role and capabilities of emergency medical services (EMS), and may not be familiar with some of the available educational materials about EMS and injury prevention that may enhance their abilities to provide preventive counseling.

Goals and Objectives

Project goals and objectives are to:

1. Improve integration of primary care providers into the North Carolina EMSC system by enhancing provider pediatric emergency skills and familiarity with EMS.

   Objective: Increase the number of primary care providers who have current pediatric resuscitation knowledge and skills; who train office personnel to identify acutely ill or injured children; whose offices have protocols for treatment of specific emergencies; and who are familiar with the role and level of training of local EMS providers.

2. Familiarize primary care providers with existing EMSC materials and resources, and assist them in providing this information to children and their families.

   Objectives:

   a. Increase the number of primary care providers who are familiar with: Make the Right Call and the American Academy of Pediatrics' written instructions regarding appropriate access and use of their local EMS systems; existing home first-aid materials such as *Choking Prevention and First Aid for Infants and Children* (AAP) and *Emergency Medical Treatment: Children* (National Safety Council); existing materi-

als and resources (e.g., Medic Alert) for children at high risk (e.g., seizure disorders, asthma, sickle cell disease); and TIPP, the National SAFE KIDS Campaign, and other injury prevention materials.

b. Identify potential barriers to increasing teaching of injury prevention in the primary care setting.

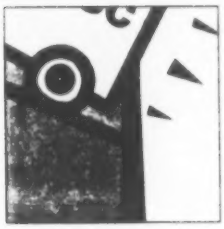
Methodology

A 1-1/2-day training and continuing education workshop for primary care providers will be implemented over a 2-year period. The workshop will include a lecture review of pediatric resuscitation and protocols, and an interactive mock code that features skills stations, addressing office preparedness for emergencies and interfacing with EMS providers. In addition, there will be an emergency resources forum, where providers will be exposed to information and materials about EMS, home first aid, high-risk children, and injury prevention that can be provided to children and their families. A project committee will work with EMSC task force members, primary care providers, EMS personnel, and health educators to develop and pilot the workshop. The workshop will then be implemented throughout the State via five teleconferenced sessions at 8 to 10 sites statewide. In addition, a videotaped workshop will be produced for ongoing training.

Evaluation

Workshop effectiveness will be assessed using a survey questionnaire. This survey will address primary providers' pediatric emergency skills, familiarity with EMS, and familiarity with and use of existing educational materials regarding EMS, home first aid, high-risk children, and injury prevention. A baseline survey will be given to each provider attending the workshop. This group of providers will be mailed the same survey 3 to 6 months later to reassess reported knowledge and behavior following the workshop.

Additional methods of evaluation for the workshop will include: A pretest and posttest to assess the content areas covered in the pediatric resuscitation lecture and mock code; one-to-one feedback regarding each workshop participant's performance in the mock code and skills stations; random site visits to selected practices to monitor office preparedness and use of educational materials; and use of preaddressed postcards to document any office-based emergency preparedness activities. The project survey will also be administered to a stratified random sample of primary care providers statewide during year 1 to establish a baseline data base of information about each of our objectives.



Enhancement of the State of Ohio Emergency Medical Services for Children System

Grantee
Ohio Department of Public Safety

Project Number MCH-394002

Project Period 10/01/95–09/30/97

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Problem

The major problem for the Ohio emergency medical services for children (EMSC) program is a lack of statewide programs. These programs are seen as essential to the structure of a true emergency medical services (EMS) system. Since the division of EMS has been in existence for only slightly more than 2 years, this system approach is relatively new, and many projects have been identified to create the system.

Goals and Objectives

The project goals are to:

1. Improve and standardize care for the out-of-hospital pediatric patient through the use of standardized emergency medical technician (EMT) protocols, with particular attention to EMT-Basics;
2. Raise the level of understanding of EMS medical directors in Ohio concerning pediatric care by the EMT-Basic and school nurse;
3. Raise the understanding among EMTs and school nurses of children with special health needs;
4. Reduce the time interval between pediatric injury in a school setting and entry into the EMS system;
5. Educate EMTs, children, and parents on the roles of EMS for children and other safety issues, focusing on children in wheelchairs and who are visually challenged; and
6. Identify children who have been abused through provider education and facilitate the children's entrance into the social services arena.

Project objectives are:

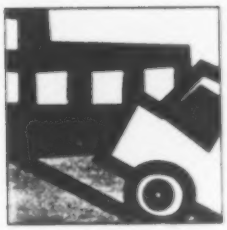
1. Development, field testing, and implementation of a consensus statewide pediatric protocol for EMT-Basics in Ohio;
2. Development of protocols and guidelines for school nurse response to pediatric injury and illness; and
3. Development and implementation of a cross-sectional community education and promotion program focusing on EMSC issues.

Methodology

The development of the EMT and nurse protocols will follow a similar workplan. Committees composed of basic practitioners, pediatric emergency physicians, and State agency representatives will be formed to evaluate and modify existing protocols to create a draft protocol for use in Ohio. Special consideration will be given to the varied levels of training and acute care facility availability in different regions of Ohio. After draft protocols have been prepared, 44 regions will be chosen for field testing. Field testing will involve implementing the draft protocols for use and evaluating outcome. Field testing will take place for a 6-month period, with a midpoint evaluation to repair any serious deficiencies in the draft plan. The promotion and education program will occur at the same time as the protocol preparation. This program will aim education efforts at four main populations: Children, children with special needs, EMSC providers, and parents. This effort will consist of directed print and radio public service announcements. Ohio, with the help of the Federal EMSC office, will chose a national representative for the EMSC issue, and create a series of television public service announcements to be aired in Ohio as a test base, and, if acceptable, on a national basis.

Evaluation

Ohio State University Department of Preventive Medicine will be responsible for the collection and evaluation of the field survey, as well as the use of target groups, and other forms of evaluation. The data produced from these evaluations will be presented to the committees in an understandable and manageable form, and will assist in preparing the final copy of the protocols to be presented to the State as a whole.



Enhancing Oklahoma's Emergency Medical System to Care for Pediatric Patients

Grantee
University of Oklahoma Health Sciences Center

Project Number MCH-404002

Project Period 10/01/94–09/30/96

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Problem

The Oklahoma emergency medical services for children (EMSC) project was established by an MCH grant for EMSC program implementation in 1991. The Oklahoma EMSC project has accomplished the following: Upgraded the First Responder and Emergency Medical Technician (EMT) Basic curriculums to include information on pediatric emergency care; produced continuing education requirements for pediatric emergency care for EMTs; trained 230 EMT instructors in the new requirements; funded and developed a mandatory statewide prehospital report form; taught the Oklahoma Pediatric Emergency Course to 11 hospitals throughout the State; and produced and distributed a complete set of prehospital protocols designed for the first responder through the paramedic to all emergency medical services (EMS) providers. In addition, EMT intermediate and paramedic pediatric curriculums are being upgraded; State regulation now requires that ambulances be equipped with pediatric supplies and equipment; Emergency Department Approved for Pediatrics (EDAP) criteria are being incorporated into the development of a State trauma system; and 1,400 copies of an injury prevention videotape targeting the Native American population have been produced and distributed nationwide and in Canada.

The EMSC implementation grant was able to address many of the problems in the State. Now other problems need to be addressed to enhance the system. Oklahoma is largely a rural State with the majority of the EMS providers in nonmetropolitan areas. Institutions that provide training to prehospital providers and rural hospitals do not have the expertise or resources to teach pediatric material without assistance. The pediatric emergency training that is available to nurses and physicians is limited and costly and requires significant course and travel time for the rural provider. No training course for pediatric EMS medical directors is available in the State. The State support system for critical incident stress management (CISM) for EMS providers is not adequate. Organizations and State agencies that are charged with issues related to children do not have a resource to help them with

their activities. Rural fatality and injury rates are significantly greater than in metropolitan areas. Child death rates are greatest for drownings, falls, burns, and vehicular crashes. EMT training requirements are not driven by State data. EMSC activities need to be institutionalized within the Oklahoma EMS system.

Goals and Objectives

The goals and objectives of the project are to:

1. Create the Oklahoma EMSC Resource Center, which will provide statewide technical support and assistance to EMS providers and child advocates.

   Objectives:

   a. Provide training resource services to 20 EMS educational instructors and 30 in-house instructors yearly;
   b. Provide training resource services to 30 hospitals yearly;
   c. Establish a loan library for audiovisual and teaching equipment;
   d. Obtain training and provide CISM services involving pediatric patients as needed;
   e. Provide pediatric medical director courses by September 1995 and yearly thereafter; and
   f. Provide ongoing assistance to child advocacy organizations and State agencies about to pediatric safety and emergency care issues.

2. Develop and initiate a Bystander Care program targeting the rural Native American population.

   Objectives:

   a. Establish a Native American Bystander Care task force by January 1995;
   b. Identify materials and the process for implementation by September 1995; and
   c. Provide 10 "train-the-trainer" courses by June 1996.

3. Establish a method for ongoing evaluation of pediatric prehospital run data to identify EMT training needs.

   Objectives:

   a. Establish the data set needed for evaluation of training needs by June 1995; and
   b. Make quarterly recommendations on EMT training needs to the Oklahoma State Department of Health, EMS Division, and the EMS Advisory Council.

4. Obtain ongoing State funding for EMSC activities.

   Objective: Introduce legislation in the Oklahoma 1995 legislative session to establish the Oklahoma EMSC Resource Center with appropriation support.

Methodology

The Oklahoma EMSC project is part of the Section of General Pediatrics, Department of Pediatrics, University of Oklahoma College of Medicine. Project offices are located at Children's Hospital of Oklahoma, which is part of the Oklahoma Health Sciences Center.

The Oklahoma EMSC Resource Center will be created to provide statewide technical support and assistance to EMS providers and child advocates. A system of support for the prehospital and hospital provider will be developed from our experience in initiating training for these groups in the past. Instead of doing all the training, we will support training organized by others. Instructors, audiovisual supplies, and teaching equipment will be provided by the resource center to support training. Advice on child safety and emergency care will be

provided through participation in task forces and regular meetings of interested groups. The pediatric medical director course will be accomplished in conjunction with the State's trauma system development project.

A Bystander Care program targeting the rural Native American population will be developed and initiated. Native American, tribal, and Indian Health Service participation will be key to program development and implementation. This project will coordinate and assist these efforts and facilitate training activities.

A method for ongoing evaluation of pediatric prehospital run data to identify the EMT training needs will be established. The Oklahoma EMSC Prehospital Care Task Force, in existence for 2 years, will be used to identify and evaluate data sets to direct pediatric EMT education. The data sets and data will be taken from the Oklahoma mandatory prehospital run report form.

Ongoing State funding for EMSC activities will be obtained. Established advisory and consortium members will create a plan to obtain ongoing State funding and legislation. The perceived value of EMSC will be enhanced when it is seen as a resource center that provides support services to a variety of individuals and groups statewide.

Evaluation

Evaluation will be based on the numbers served per objective. Complete records of request and services provided will be kept. Completion dates of activities, group minutes, and notes will be kept as appropriate for the objective.

Experience to Date

All project activities have been accomplished to date with the exception of establishing a Bystander Care program and establishing EMSC prehospital training needs. These two items have not been accomplished due to the April 19, 1995, bombing of the Murrah Building in Oklahoma City.

Texas Emergency Medical Services for Children Enhancement Project

Grantee
Texas Department of Health

Project Number MCH-484002

Project Period 10/01/94–09/30/96

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Problem

Since the first emergency medical services for children (EMSC) grant was received in 1991, great strides have been achieved in the development of a cohesive emergency care system for pediatric patients. However, emergency health care workers have limited experience in treating children with special health needs (CSHN) and in knowing how to refer children to available resources.

In Texas in 1992, more than 1,700 children died as a result of intentional and unintentional incidents, resulting in the loss of more than 88,000 years of potential life. Most traumatic incidents are considered preventable; strategies for alternative approaches need to be defined and implemented on the basis of identified local and/or cultural differences in injury patterns.

Specific research projects are needed to obtain information and analyze the effectiveness of prehospital treatment as well as to identify commonalities and differences in rural and urban violence patterns, but little work has been accomplished in this area, particularly in relation to morbidity. Linkage of data records from various sources continues to be limited.

Specialized air transport/transfer services for neonatal and pediatric patients are needed in Texas because of its size. These services lack minimum staffing and equipment standards unless they are specifically licensed as EMS providers.

Goals and Objectives

Goals and objectives of the project are as follows:

1. Ensure effective triage of children with special health needs.
   Objectives:
   a. Develop/adapt/provide training in the recognition of emergent conditions in CSHN; and
   b. Develop and distribute a resource identification template for health care providers.
2. Decrease the incidence of children with intentional and unintentional injuries.
   Objectives:
   a. Evaluate commonalities and differences in urban and rural injuries and deaths related to violence; and

b. Develop local injury prevention programs to address specific local and cultural phenomena.

3. Improve data collection, linkage, and dissemination of discovered information.

   Objectives:

   a. Establish linkages and cooperation among local, regional, and State agencies in the areas of data collection, injury control, and other safety promotion activities; and

   b. Evaluate the effectiveness and use of pediatric prehospital treatment modalities.

4. Establish rules requiring standards for neonatal and pediatric air and ground transport services.

   Objective: Develop standards for specialized transport service.

Methodology

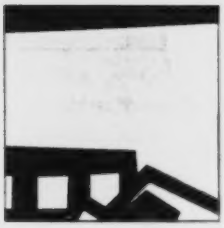
The State of Texas has legislatively mandated that the EMSC program within the Bureau of Emergency Management, Texas Department of Health, integrate the needs of pediatric patients into the existing emergency medical services (EMS) system. This project will be coordinated by the EMSC program administrator with support from the following: (1) Bureau of Emergency Management staff; (2) task groups that will be assembled to complete specific objectives of this project, such as evaluating materials obtained from States with EMSC projects and from nursing and allied health training programs, adapting and developing training programs, and assisting in the development of draft regulations for specialized transport vehicles; and (3) organizations or individuals contracted to develop local pediatric injury prevention initiatives, develop or adapt training materials (including interactive software), and assist with the collection of data. Data collection and research activities will be conducted in conjunction with activities of local, regional, and State programs. Training will be provided for each of the identified problem areas.

Evaluation

Process and outcome measures will be used to track project activities. Measures to be used will include the number and types of training materials developed; the number of individuals participating in and successfully completing training programs; the number of new local injury prevention activities initiated, such as the formation of local SAFE KIDS chapters; the number of articles and reports developed as a result of the data linkage and research objectives; and the level of decrease in preventable pediatric injuries and deaths to conform with the *Healthy Texans Year 2000* objectives.

Experience to Date

Accomplishments for the EMSC program include appointment of an EMSC task force, selection of a consultant for CSHN, and selection of trauma service areas for study and prevention programs. Various other activities are also being initiated, such as networking with other States, setting up data linkages with other State agencies, networking with SAFE KIDS coalitions, and creating working relationships within the Texas Department of Health to accomplish EMSC goals and objectives.



Vermont Emergency Medical Services for Children System Enhancement Project

Grantee
Vermont Department of Health

Project Number MCH-504002

Project Period 10/01/95–09/30/97

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Problem

Vermont's rural emergency medical services (EMS) system has not fully integrated programs addressing prevention, quality assurance, and family-centered care for pediatric patients. Two of these health system needs were specifically identified during a recent National Highway Traffic Safety Administration technical assistance EMS assessment. It is essential that programs designed to address these problems be sustainable using existing local and State resources.

Goals and Objectives

Project goals are to:

1. Establish a pediatric injury prevention and control advisory committee within the Vermont Department of Health (DOH);
2. Design and implement a prehospital quality assurance program for the prehospital care of critical pediatric emergencies;
3. Design and implement a study of prehospital providers and organizations on attitudes toward family-centered emergency care; and
4. Establish regional coordination of emergency medical services for children (EMSC) in New England by providing leadership and administrative support to the New England Council for Emergency Medical Services (NECEMS) Committee for EMSC.

Methodology

A pediatric injury prevention and control committee will be established in the department of health to include relevant participants from both the department and the broad pediatric/EMS community. This group will be the focal point for an examination of priorities within the injury prevention and control arena. A descriptive epidemiological study will be performed using existing State data.

Four of the State's 13 EMS districts will be selected to participate in a model quality assurance (QA) process that will assess elements of the prehospital care of critical pediatric patients. A team of physicians, nurses, and prehospital personnel will be assembled to assist in the design and imple-

mentation of the QA program. The care of medical and trauma patients age birth through 18 years will be examined using scene time, oxygen therapy, vital signs obtained, and family involvement as quality indicators. The QA process will be refined during the grant period and a manual developed to support future statewide implementation.

The knowledge and attitudes of prehospital providers regarding family-centered emergency care will be assessed using a random sample survey of Vermont's prehospital EMS personnel. Specific scenarios involving decisions about family-centered emergency care will be provided and the responses of prehospital personnel to those scenarios will be obtained and analyzed. DOH's Center for Health Statistics will use the data to measure the extent to which family-centered emergency care is currently being provided in the prehospital setting. Results of this effort will be employed in future statewide EMS conference presentations and other training programs.

Administrative support will be provided to the EMSC committee of NECEMS to support collaboration and cooperation between the New England States. A specific activity of the committee will be to arrange a conference exploring the topic of family-centered emergency care. Revenues from an initial conference offering will be retained to support the conference as an annual event.

Evaluation

The effectiveness of the pediatric injury prevention and control committee will be measured through DOH's ongoing effort to monitor injury prevention objectives contained in the *Healthy Vermonters 2000* and *Vermont Healthy Babies* documents. A second measure will be the number of new injury prevention efforts begun based on priorities identified in the epidemiological survey.

The quality assurance goal will be evaluated using presurveys and postsurveys of EMS district QA committees to determine knowledge of and satisfaction with the QA process.

Changes in the awareness of and patient management decisions by EMS personnel regarding family-centered emergency care will be determined using a provider survey. During the project period, EMS personnel will be exposed to specific training programs on the topic in an effort to improve awareness and decision-making skills.

The EMSC educational conference will be evaluated using a participant evaluation form that will measure participant impressions of topics, presenters, logistics, etc. Responses will be reported in summary form to NECEMS to be used as a tool for planning of future conferences.

Emergency Medical Services for Children (EMSC) Enhancement Grant for Poison Prevention

Grantee
Wisconsin Department of Health and Social Services

Project Number MCH-554002

Project Period 10/01/95–09/30/97

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Problem

According to the 1990 U.S. census, Wisconsin has 18 metropolitan and 53 rural counties. Wisconsin is 91.3 percent non-Hispanic white. The largest racial minority in the State is black, at 5 percent (244,500) of the total population; there are about 93,000 Hispanics, 53,000 Asians, and 39,000 American Indians in Wisconsin. Youth under age 18 are 40 percent of the minority population, compared to 25 percent of the white population.

In 1994, 76,000 Wisconsin children had a condition requiring specialized health care and related services. Two percent (30,000) of children had severe conditions that create special concerns for the child and family.

Unintentional injuries among children often reflect the interaction of several factors: The child's developmental state, parental awareness of a child's abilities, and a product (such as medicine or a cleaning liquid) or environment (such as unlocked kitchen cabinets). Poison control staff prevent poisoning through education. Accessing their expertise reduces the time required for EMTs and hospitals to provide definitive treatment of poisoning emergencies.

Children with special health needs are at increased risk for emergency illness due to poisoning because of their physiologic and mental health conditions. Children with conditions that compromise lung function (e.g., asthma, cystic fibrosis, intubation) are more sensitive to airborne substances such as cleaning solutions, new carpeting, and insect sprays. Children with special health needs often have complex medication regimens, resulting in the potential for untoward side effects when taking over-the-counter medications or in cases of accidental overdosing or interdrug reactions. In Wisconsin, poisoning and intentional overdoses account for 8.1 percent of all emergency hospitalizations for children ages 0–17 years in 1989. Intentional poisoning is more likely to occur in the adolescent population, specifically related to suicide attempts and use of alcohol and street drugs.

Goals and Objectives

The project purpose is to prevent and reduce the incidence of intentional and unintentional poisonings in the pediatric population and to improve the EMS system response to pediatric poisoning emergencies. Goals and objectives are:

1. Public education on poisoning prevention.
   Objectives:
   a. By July 1997, the Statewide Poison Control System will develop a plan to collaborate with the CHILD ALERT 10–33 regional centers and provide specific poisoning prevention education for families of children with special health needs; and
   b. By July 1997, the Statewide Poison Control System will develop, implement, and evaluate a plan to produce timely and culturally relevant poisoning prevention public education materials.
2. Professional education on poisoning intervention and prevention.
   Objectives:
   a. By July 1997, develop, present, and evaluate curriculum materials on poisoning intervention and prevention; and
   b. By July 1997, develop, implement, and evaluate a plan to improve communication protocols among the Poison Control Centers, local EMS/transport services, and hospital emergency departments.

Evaluation

The EMSC Poisoning Prevention Advisory Group will review all project activities and products. Once products are developed, they will be pilot tested and revised. Training modules and inservice presentations will include a participant evaluation form. Feedback will be used to revise materials.

Achievement of objectives will include tracking numbers and distribution of educational materials, amount of airtime for public service announcements, numbers of training sessions and participants, numbers of scholarships for the statewide poison control conference, feedback from providers who serve targeted communities or populations, and the Poison Control Centers' client satisfaction surveys.

Any progress in the reduction of the personal and financial costs of pediatric poisoning will benefit all Wisconsin residents, and help to achieve goals for reduction of childhood injuries as stated in *Healthier People in Wisconsin: A Public Health Agenda for the Year 2000*. The results in the Wisconsin EMSC project can be used as a resource for other States in their efforts to reduce the incidence of nonfatal poisoning as outlined in *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*.

Targeted Issue Grants

Targeted issue grants are intended to address specific, focused issues related to the development of EMSC capacity, with the intent of providing potential national models. Topics are quite variable under this category, reflecting the broad spectrum of the EMSC program.

In FY 1996, three new awards were made in this category, bringing to 20 the total number of awards ever made in this category.

New projects are as follows:

Outcome Evaluation of Emergency Medical Services for Children (AR) MCH-054002

Evaluation of California Emergency Medical Services for Children (CA) MCH-064005

School Nurse Emergency Medical Services for Children (CT) MCH-094002

Effective Communication and Cultural Competence in Emergency Care of the Adolescent: A Curriculum for Emergency Medical Service Providers (DC) MCH-114003

Program Against Violent Events (PAVE) (IL) MCH-174002

Methodology for Evaluation and Reduction of Pain and Distress in Pediatric Emergencies (MO) MCH-294002

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Psychological First Aid for Children Who Witness Violence (MO) MCH-294004

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Outcome Evaluation of Emergency Medical Services for Children

Grantee
University of Arkansas
for Medical Sciences

Project Number MCH-054002

Project Period 10/01/93–09/30/96

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Problem

The mission of the Outcome Evaluation in Emergency Medical Services for Children (EMSC) project is to promulgate comprehensive systems of care that reduce the morbidity and mortality of child emergencies. Evaluation of the effectiveness of new programs, however, is hampered by several problems. First, death is a relatively low frequency event occurring in only 5–10 percent of the group at highest risk (pediatric intensive care unit admissions). As a result, a very large number of cases is needed in order to demonstrate a reduction in mortality related to system change. Second, morbidity is also an important outcome. Unfortunately, no suitable instrument is presently available for measuring morbidity in this setting.

An additional problem is that, despite an EMSC programmatic priority to evaluate "strategies to reduce the emotional toll of pediatric emergencies," the frequency, nature, or severity of the emotional toll and the subgroups that may be at risk for these problems have not been well established.

Goals and Objectives

The project has identified the following goals and related objectives to be completed during the 2-year project period.

Goal 1: The primary goal of our project is the validation of scales to measure cognitive and physical morbidity.

Objectives:

a. Our primary objective will be to determine whether the Pediatric Overall Performance Category (POPC) and Pediatric Cerebral Performance Category (PCPC) scales differentiate between children of varying cognitive and general adaptive functional abilities. To do so, we will test four hypotheses to determine the relationship between POPC and PCPC scores and other standardized instruments that measure the same constructs.

b. Secondarily, we will evaluate a number of additional measures of cognitive and general adaptive function for children in each POPC and PCPC outcome category.

c. We will evaluate the agreement between clinician and maternal ratings of PCPC and POPC.

d. We will assess the longitudinal stability over 6 months of POPC and PCPC ratings and other measures of physical/adaptive function and psychosocial adjustment.

Goal 2: A secondary goal is to investigate the nature, severity, and predictors of poor psychosocial adjustment following child emergencies.

Objectives:

a. We will assess child emergency outcomes in the following additional domains: Child behavior/adjustment, maternal psychosocial adjustment, child behavior, and family stress.

b. We will perform exploratory analyses to identify predictors of poor psychosocial adjustment.

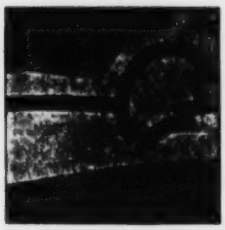
Methodology

Investigators in the Pediatrics Department of the University of Arkansas for Medical Sciences plan an observational study including both cross-sectional analysis and prospective followup of a cohort of 200 patients discharged from the pediatric intensive care unit. The cohort will be accumulated consecutively over a 12-month enrollment period to a maximum of 25 patients in each of the 8 cells of the study. These eight cells are defined by the patient's age (under 42 months, or 42 months to 21 years) and hospital discharge PCPC score (1, 2, 3, or 4). Multiple measures of cognitive and physical function and psychosocial adjustment will be assessed at the time of hospital discharge, and again at 1 month and 6 months following discharge. Data will be summarized descriptively, then statistical procedures will be employed for hypothesis testing. Finally, exploratory analyses will be performed to identify predictors of outcome in the psychosocial domains.

Because of the research nature of the project, there will be no direct impact on State agencies or service areas. However, the directors of the following State agencies will receive copies of our quarterly report in order to apprise them of our progress: State Office of Emergency Medical Services, State Department of Health, and State Highway and Transportation Department.

Evaluation

All objectives for the study will be completed during the 2-year project period. Progress in accomplishing objectives will be monitored and reported against quarterly interim milestones for numbers of patients enrolled and evaluated.



Evaluation of California Emergency Medical Services for Children Model

Grantee
California Emergency Medical Services Authority

Project Number MCH-064005

Project Period 10/01/93–10/31/96

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Problem

The Federal Emergency Medical Services for Children (EMSC) program has brought powerful visibility to issues in pediatric emergency and critical care and has helped create numerous State and local programs aimed at the prevention and management of acute childhood illness and injury. In California, the work of the original EMSC Demonstration Project and of the 1991–93 Targeted Issues Grant has laid a broad and sturdy foundation for widespread integration within local emergency medical services (EMS) systems. The 1991–93 Targeted Issues Project established a comprehensive model for an integrated pediatric emergency and critical care continuum—from prevention through treatment, specialized care, and rehabilitation.

While the California EMSC model provides a clear set of guidelines for clinical and operational elements that are essential to implement emergency medical services for children, no objective evaluation component gauges the cost or effectiveness of these services. No EMSC project has yet provided such analysis. Key ingredients are missing in an evolving concept of EMSC at the local, State, and national levels. Therefore, pediatric emergency and critical care systems face a growing imperative to integrate objective system evaluation with system planning, implementation, and management in order to justify public expenditures and to validate EMSC guidelines.

Goals and Objectives

The first goal of this project is to monitor and evaluate the California EMSC model in two EMS systems (one urban, one rural) in order to analyze the administrative and program costs of implementing the model. We will provide funding from the Preventive Health and Health Services (PHHS) Block Grant to two local EMS agencies (California's equivalent of EMS regions). These agencies will implement pediatric subsystems based on the California EMSC model. During this implementation, we will analyze the administrative costs of implementing the model (including planning,

implementation, and monitoring of the pediatric subsystem) and the program costs (including both one-time expenses and ongoing costs).

The second goal is to identify political, technological, legal, and financial barriers to implementation of the California EMSC model. We will accomplish this by monitoring and evaluating the implementation process and through interviews with system participants.

The third goal is to promote statewide acceptance of the California EMSC model. We will survey EMS system lead agencies regarding the current status of pediatric subsystem development. We will also conduct consultation visits to each of the 32 EMS system lead agencies to obtain feedback on the content of the California EMSC model and to determine the feasibility of its implementation. This will culminate with a training session for EMS system lead agency staff on implementing the California model.

The final goal is to revise the California EMSC model and distribute it nationally. We will base the revisions on the lessons learned from the two grantee agencies and from the survey and consultation visits. We will distribute the final products nationally and will present them to an appropriate national audience.

Methodology

Our major activity will be to provide grant funds to two local EMS agencies and to conduct a real-time evaluation of their implementation process. We will receive and analyze the data that the agencies have agreed to submit and will meet monthly with agency staff. Reports will be issued regarding costs and barriers to implementation.

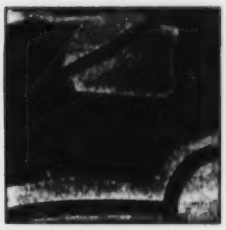
In addition, we will use statewide survey and consultation visits to identify implementation barriers and to promote implementation of the model. We will conduct a training session in cooperation with the Emergency Medical Directors Association of California.

In each stage, we will use information from the National EMSC Innovation Bank and consult with the National EMSC Resource Alliance.

The California Emergency Medical Services Authority is the State lead agency for EMS. We will provide PHHS Block Grant funds to two local EMS agencies and will use the grant process to coordinate with them. We will have direct contact with each of the local EMS agencies in the State. Additional coordination will result from continued collaboration with the California Pediatric Emergency and Critical Care Coalition and Project Steering Committee, which were instrumental in the development of earlier EMSC products.

Evaluation

Specific tracking techniques for each stage of the methodology include contracts between the California EMS Authority and the two grantee agencies; submission of required reports; completion of site visits, interviews, and the training session; and issuance of the final reports for each objective and of a revised California EMSC model.



School Nurse Emergency Medical Services for Children

Grantee
University of Connecticut Health Center

Project Number MCH-094002

Project Period 10/01/94–09/30/96

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Problem

School nurses in many States have been underused by emergency medical services (EMS) systems as health professionals providing prehospital care to children and youth. School nurses recognize their need for a program that will prepare them to provide appropriate emergency care in schools or at school activities. The emergency care courses available to nurses are targeted to hospital settings or medical transport.

In 1985, the Department of Pediatrics, Health Center, University of Connecticut, in collaboration with the State Department of Education's School Health Services consultant and the State Office of Emergency Medical Services, developed an effective model for school nurses that combines EMS and nursing. This program has trained more than 900 nurses but needs updating and refining for national dissemination.

Goals and Objectives

The project goal is to reduce morbidity and mortality in children and youth who are injured or become ill at school through the development, implementation, and national dissemination of an effective training model—School Nurse Emergency Medical Services for Children (SNEMSC).

The objectives are that school nurses will:

1. Use prioritized assessment skills recognized by emergency medical services for children (EMSC) in identifying emergency situations and determining the seriousness of an illness or injury to a student;
2. Provide a level of prehospital care in schools that conforms with EMSC protocols and policies, the American Nurses Association's 1993 National Standards of Clinical Nursing Practice, and the *National Association of School Nurses' 1993 School Nursing Practice, Role and Standards*;
3. Collaborate with school administrators, school medical advisors, and public safety services in developing a comprehensive school emergency plan that establishes pediatric protocols for school health services and adequate communication between school and community services to provide access to

emergency medical services for all injured or seriously ill students;

4. Develop intervention strategies for specific students in collaboration with primary care providers, parents (and students, when appropriate), school medical advisers, school staff, and local prehospital and EMS providers to ensure access to appropriate emergency services for students with special health needs; and
5. Collect and analyze data on school-related injuries or serious illness to reduce risk of injury and improve the health and emergency care of students.

Methodology

The project plan is to restructure the existing Emergency Care Training for School Nurses course with the collaboration of such organizations as the Association of Maternal and Child Health Programs, Emergency Nurses Association, National Association of School Nurses, and National Association of Pediatric Nurse Associates and Practitioners for national implementation and dissemination. The School Nurse Emergency Medical Services for Children program is designed with five distinct but interconnected phases.

Phase 1 is the initiation of the SNEMSC program. A SNEMSC office and staff will be established at the Department of Pediatrics; members will be selected for the steering committee and the national advisory committee; an agreement will be formalized with the Bureau of Educational Research for evaluation; and resources, programs, writers, and consultants will be identified.

Phase 2 is program development. The student and instructor manuals will be rewritten for multistate use. The initial drafts will be used in a pilot program in Connecticut. Content for each module will be assessed for validity and reliability, and modifications will be made as needed. Computer- or technology-assisted learning will be considered for delivery of the program. Criteria for instructors and out-of-State pilot sites will be established.

Phase 3 is implementation of the SNEMSC program. The project will conduct three pilot programs out of State to further test course content and effectiveness. Ten instructors will be selected from other States for a "training-of-trainers" workshop at the beginning of year 2.

Phase 4 is dissemination of the SNEMSC program. During this phase, the student and instructor manuals and instructional materials will be published, and each of the 10 instructors will replicate the program at least once. Project staff will observe the replication courses and provide technical assistance or problem resolution.

Phase 5 is SNEMSC program evaluation.

Evaluation

Qualitative evaluation is a major component of the development of the curriculum and workshop instruction of the SNEMSC program. Included in the evaluation are: (1) Development of the initial measure—a knowledge and skill measure covering content across all instructional modules and aimed at reliability, content validity, and suitable item difficulty and discrimination; (2) emergency practice self-efficacy tools, one for each module, administered before and after the workshop and again 6 months after the workshop; (3) a self-report questionnaire on perceived change in emergency care delivery, administered 6 months after the workshop; and (4) a self-report questionnaire evaluating the workshop instruction quality and the instructional materials usefulness. Quantitative evaluation

will show the number of school nurses participating during the pilot and dissemination phases, the number completing the prescribed program activities, and the compilation of injury survey data collected by school nurses participating in the pilot programs.

Experience to Date

Year 1 focused on the total revision of the course content. Use of many writers complicated monitoring and completion of chapters. Pilot sites have been set in Arizona, Iowa, New Jersey, and San Antonio, TX. The nurse consultant will increase his/her time during June–September 1995 to complete course materials for the pilot program and to ensure that SNEMSC objectives are met.

Effective Communication and Cultural Competence in Emergency Care of the Adolescent: A Curriculum for Emergency Medical Service Providers

Grantee
George Washington University

Project Number MCH-114003

Project Period 10/01/94–09/30/96

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Problem

The past three decades have been marked by a dramatic shift in patterns of adolescent morbidity and mortality. Organic etiologies of disease have declined dramatically, while psychosocial and behavioral problems and injuries related to high-risk activities figure prominently in why adolescents currently use emergency medical services (EMS). Lack of appropriate training, lack of communication skills, and lack of confidence are barriers that prevent many health care providers from delivering quality adolescent care. Several comprehensive efforts have been undertaken to address these deficiencies in primary care settings. However, little attention has been paid to the adolescent patient in emergency care settings. Misunderstanding of the adolescent patient is often complicated by sociocultural differences between patients and members of the health care delivery team.

Goals and Objectives

The project goal is to improve EMS provider capabilities in communicating with and understanding adolescents. The two primary objectives are to:

1. Develop an adolescent health curriculum for EMS providers, focusing on interpersonal skills and cultural competence, by year 1; and
2. Provide the adolescent emergency education program to at least 144 providers through 6 course offerings in year 2.

Methodology

The curriculum will be developed to reflect current knowledge in adolescent health and cultural competence. Several educational modalities, including lectures, case scenarios, role playing, self-assessment exercises, and small group discussion, will be used to present material in five main content areas:

1. Cognitive and maturational patterns of adolescent development;
2. Common behavioral and psychosocial emergencies of adolescence;
3. Legal issues pertinent to the care of adolescents in emergency settings;

4. Self-exploration of cross-cultural knowledge, beliefs, attitudes, and practices; and
5. Knowledge relevant to culturally competent care of specific cultural groups.

Evaluation

Successful completion of a comprehensive program manual, accompanied by an instructors' guide and supporting educational tools (i.e., slides and instructional videotapes), will serve as evaluation criteria for objective 1. Assessment of the numbers of courses given, as well as the numbers of providers instructed, will serve as evaluation criteria for objective 2. To evaluate course content, pretesting and posttesting of specific knowledge points will be used as a short-term objective measure of the project's success at meeting the stated goal. A long-term assessment of changes in participant perceptions and behavior will be evaluated through the comparison of baseline information collected during the self-assessment exercises and a followup survey sent to program participants 2 months after course completion.

Experience to Date

Curriculum development remains on schedule according to our projected timeline for year 1. Collection of resources necessary for program development has been ongoing. Many valuable monographs, books, journal publications, and curriculums have been collected on issues pertinent to our subjects (cultural diversity, adolescent health, and emergency care). Provider needs assessments have been conducted with EMS staff at Children's National Medical Center. Responses to the training have been enthusiastic. Writing and content design have begun incorporating the content areas previously described in the methodology.

Program Against Violent Events (PAVE)

Grantee
Northwestern University
Medical School

Project Number MCH-174002

Project Period 10/01/94–09/30/96

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Problem

Injuries from gun assaults have dramatically increased in recent years. Homicide is the leading cause of death for black male youth. Eighty percent of these deaths involve firearms. Effective interventions for preventing violence are lacking.

Goals and Objectives

The goal of this project is to develop and evaluate effective intervention models that contribute to reducing both the incidence and the lethality of violence.

Development of a peer role model intervention will be the first component of the project.

In the second part of the project, emergency medical services for children (EMSC) personnel will be trained to be violence prevention educators.

Methodology

The Department of Preventive Medicine, Northwestern University Medical School, working closely with the Department of Pediatrics, Children's Memorial Hospital, is joining forces with a community-based organization, Cabrini Green Youth Program (CGYP), to develop a multifaceted approach to decrease violent injuries among urban youth. CGYP, a 10-year-old program, serves Cabrini Green, a nationally known pocket of inner-city poverty and violence. One of its 13 weekly activities involves adolescents teaching younger children about risky behaviors. Assessment of the efficacy of the CGYP peer modeling intervention requires a systematic approach. It will require establishing a data base, obtaining baseline data and serial measurements, developing and presenting the violence prevention curriculum, and evaluating the curriculum's effects. Twenty adolescents, with guidance, will develop 10 violence prevention activities per year to teach 60 children ages 6 through 12.

Producing violence prevention educators also requires a stepwise plan—developing a new EMSC product, providing EMSC training, and making public education presentations. The EMSC product will include a slide set and lecture materials that

EMSC personnel will be able to use for future public speaking efforts. They will also attend a 2-day seminar on effective public speaking. Some veteran EMSC personnel will be enlisted to become EMSC trainers and will play a significant role in teaching the next group of EMSC personnel.

Evaluation

Several outcome measures will be used to assess the effectiveness of the CGYP peer mentoring. The adolescents will take a self-image survey three times in the next 2 years to measure changes in their self-esteem. The CGYP 6- to 12-year-old children will be compared with a control group of Cabrini Green children who are not in CGYP. Three serial outcome measures will be used—a violence knowledge study, school behavior, and emergency department use.

To assess the effectiveness of EMSC training, EMSC personnel will keep track of how many lectures they give. A clipping service will be retained to assess media coverage.

Experience to Date

Prior to designing and teaching the curriculum, the peer mentors completed the survey to assess their self-esteem at baseline. During the last 3 months, the adolescents have designed three violence prevention activities and have taught the children. When completed, these lessons (and those developed over the next year) will be available for distribution as an EMSC product. Baseline assessment of violence attitudes, school behavior, and emergency department use has been collected for cases and controls.

The violence prevention interactive educational software is currently being developed. We have also formed a network of EMSC professionals and parents whose children have died from firearm injuries to work together to decrease the lethality of violence, using the public health approach. Plans for the leadership conference to decrease firearm injuries are currently being finalized.

Even with the full commitment of CGYP, it has been more difficult than anticipated to reconcile the relaxed approach of a volunteer-run community organization with the more rigid structure required to perform a meaningful research project. This transition took several months but a balance between the two has been reached. Another difficulty has been that the gang truce in Cabrini Green ended at about the time we were awarded the grant. For this reason, we had a difficult time finding a person to enroll controls. By training a mother from CGYP who lived in Cabrini Green, we were able to safely enroll the controls we needed.

Methodology for Evaluation and Reduction of Pain and Distress in Pediatric Emergencies

Grantee
Washington University

Project Number MCH-294002

Project Period 10/01/93–09/30/96

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Problem

Medical emergencies are among the most distressing events in the lives of children and their families. Frightening and painful diagnostic and therapeutic procedures often occur; yet the pain, fear, and anxiety confronting children and parents are frequently unrecognized and poorly controlled in the emergency medical services (EMS) setting. Providers of emergency medical services for children (EMSC) must begin to employ techniques to minimize pain and reduce the emotional toll of the emergency on the child and family. A standardized, rigorous, and reliable technique is needed to evaluate the pain and anxiety experienced by those involved in pediatric emergencies. A strategy for evaluating and reducing the pain and distress of children and their parents during childhood emergencies is an important step toward improving the emotional and physical outcome for sick and injured children and their families.

Goals and Objectives

The goal of this project is to reduce the physical and emotional impact of emergencies on the child, the family, and the health environment. We have developed a methodology to assess interventions designed to reduce pain and distress during emergency procedures and thereby improve the emotional well-being of the child and parents. We are testing assessment tools in a prospective trial to validate the methodology. This methodology will form the basis for development of derivative and more portable instruments, which can be used to assess additional interventions and train other providers to recognize pediatric distress and will reduce the emotional toll of injury and illness in the EMSC setting.

Methodology

We are conducting a randomized clinical trial comparing two regimens—ketamine/ midazolam and fentanyl/midazolam—to minimize pain and distress in a sample of children ages 5–15 with ortho-

pedic injuries requiring emergency procedures. To assess the pain experience, we are using the Observation Scale of Behavioral Distress (OSBD) to score videotaped records of pain behaviors and the Faces visual interval pain scale to document the child's self-report. We are monitoring child-parent and child-provider interactions. Linear analog scales are used to evaluate anxiety in parents. To evaluate problems associated with our interventions we are documenting the physiologic complications and the adverse effects of the therapies employed. Physician satisfaction is assessed, as are long-term outcomes for the children and parents.

The Missouri Department of Health and other pediatric centers in Missouri support this project. These centers anticipate using the methodology or its derivatives to evaluate and reduce stress in pediatric emergencies.

Evaluation

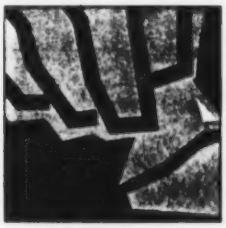
In the initial 3 months, we monitored installation of the equipment, training of staff in the study protocol, and pilot testing of the measurement tools to establish reliability. In the current 18-month period, we are monitoring data collection: Enrollment, randomization, administration of the pain and anxiety tests, and documentation of physiologic data and complications of therapy. Videotapes are reviewed for behavioral data coding. Collected data are managed with a computer-generated data base. The final 3 months will be devoted to data analysis and outcome reporting. Project activities are tracked through investigator conferences.

Experience to Date

The system setup, including video recording and physiologic monitoring systems, has been completed. The training of emergency department providers in the study techniques and in equipment operation has been completed.

The pain and distress assessment techniques were pilot tested and adapted for the conscious sedation procedures in the emergency department. Blinded reviewers were trained to code the adapted OSBD, and interrater reliability was confirmed.

Patient enrollment and data collection have begun. Coding of patient data is also in progress. Preliminary data were analyzed for presentation at the national EMSC conference in April 1994 and for presentation at the national meetings of the Ambulatory Pediatric Association and the Society for Academic Emergency Medicine in May 1994.



Psychological First Aid for Children Who Witness Violence

Grantee
University of Missouri at Kansas City

Project Number MCH-294004

Project Period 10/01/94–09/30/96

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Problem

The incidence of the involvement of children in violent acts is exceedingly high in Kansas City, MO, as in other metropolitan areas. Studies have shown that children who witness violent acts may suffer from posttraumatic stress disorder, but that some short-term intervention—Critical Incidence Stress Management (CISM)—has proven effective in ameliorating this stress reaction in adolescents and adults.

Goals and Objectives

The Psychological First Aid (PFA) for Child Violence Witnesses Project focuses on the problem of the psychological and emotional impact that witnessing an act of violence (e.g., homicide) has on a child. The overall goal of this project is to enhance the community's ability to respond to the growing incidence of violence and its impact on the children who view the violence.

The objectives are to:

1. Establish a community referral network among organizations and systems that respond to and treat children affected by violence;
2. Train and implement multidisciplinary pediatric CISM teams who are sensitive to children of diverse cultures;
3. Identify and reduce the emotional toll on children ages 5–11 who witness violence in the target community of Kansas City;
4. Establish a baseline data set on the incidence of children under the age of 16 in Kansas City who witness homicides and firearms injuries to another child; and
5. Disseminate to a wide audience the findings on community response and childhood witness to violence and firearm injuries.

Methodology

A Psychological First Aid network will be established with representatives of organizations and systems—including police, MAST Emergency Services, Children's Mercy Hospital, YouthNet, schools, Ad

Hoc Group Against Crime, Division of Family Services, and Family Court—that respond to and treat children who witness or are affected by violence. Referral of children and information for the data base will be provided by these organizations.

The CISM program will be adapted for a younger age group and a training manual will be produced. Multidisciplinary teams consisting of a social worker, a psychologist, an emergency medical services (EMS) worker, adolescents, and a community worker will be formed and trained in the adapted CISM program.

Within 72 hours of a referral from the PFA network, a team will visit with the child who witnessed the violence and with the child's family to conduct the CISM training. A second followup visit will include use of Garbarino's *Let's Talk About Living in a World With Violence*. Followup, when needed, will be through the Marillac Center (psychological therapies) or support groups.

A baseline data set on childhood witnesses to violence (homicides) and pediatric firearm injuries will be maintained. Prevalence of childhood witnessing of violence and posttraumatic stress disorder will be determined on the basis of surveys in three elementary schools and two junior high schools in the Kansas City, MO, School District.

Training in these techniques for EMS workers will be conducted first statewide and then regionally.

Evaluation

Profiles of the children served and those referred to the PFA network will be developed and updated semiannually. Preintervention assessment will include drawings based on the Garbarino workbook, the Children's Behavior Checklist, and the Reaction Index. Postintervention assessment will occur at 1 month and 6 months. Two control groups of children, one living in high-crime ZIP Code areas and one living outside high-crime ZIP Code areas, will be used as comparisons with the children receiving the intervention.

Experience to Date

A project coordinator has been hired. The community advisory board has been formed. The community referral network has been formed with over 20 community organizations. Monthly meetings have been established. A brochure and newsletter *(Targeted Issue)* are in production.

CISM has been adapted for children, and the PFA program has been piloted. A PFA training manual, instructor's material, and slide set have been developed. The first training session has been conducted for 25 team members. The training is being evaluated with both a pretest and a posttest, and a course evaluation. Five children have received the first part of the PFA intervention since the training.

The protocol for the research component is being written.

EMS Personnel as Community Injury Prevention Advocates

Grantee
University of New Mexico

Project Number MCH-354002

Project Period 10/01/94–09/30/96

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Problem

New Mexico has the second highest injury fatality rate in the country. Several factors contribute to this high injury rate: A young population, a high proportion of ethnic and minority groups, and a high rate of poverty. Factors such as youth, minority status, and poverty are associated with higher rates of risk taking and injury. While these factors may seem overwhelming, our previous project in emergency medical services for children (EMSC) has made significant progress in increasing attention to and improving the health of children and families in New Mexico. The existing emergency medical services (EMS) system in New Mexico now has an enhanced capacity to care for the pediatric patient: (1) Improved ongoing statewide clinical training emphasizing pediatric patients for emergency medical technicians (EMTs), nurses, and physicians; (2) research illustrating risk factors for childhood injury; (3) community outreach and coalition participation by EMSC project staff; and (4) injury prevention demonstration projects. Injury prevention and community and coalition building were the cornerstones of our original EMSC project. In a rural State such as ours, EMS personnel are often the most medically sophisticated people in the community and are ideally suited to play an expanded role in injury prevention. To encourage EMTs to join our efforts, we incorporated injury prevention ideas in all pediatric curriculums revised by our EMSC project and developed *An EMT's Handbook for Injury Prevention and Community Action*. We will develop the prevention network and momentum begun on our original project among EMTs by defining their role in the prevention of both unintentional and intentional injuries. While the emphasis is on injury prevention, the project will allow us to institutionalize the role of EMS personnel as prevention advocates in New Mexico and lay the groundwork for the development of expanded EMS involvement in other areas of public health, such as immunizations and well-child checkups.

Goals and Objectives

The overall goal of this project is to reduce the morbidity and mortality associated with childhood injury in New Mexico by establishing and developing the State's capacity for coordinated planning, implementation, and evaluation of injury prevention projects by prehospital providers in both rural and urban areas of the State. We seek to link EMS personnel with existing community coalitions, primary care providers, law enforcement, and other available resources to enable EMTs to use their prevention training and skills successfully.

Methodology

The University of New Mexico (UNM) Department of Emergency Medicine (DEM) is the agency for this project. DEM has established a strong commitment to both the treatment and the prevention of injury and illness in children in collaboration with the Department of Pediatrics. DEM will ensure consistency and quality of the project by hiring one full-time person to offer technical assistance and monitor the program in coordination with an advisory committee and other project staff. Particular emphasis will be on training EMTs in the basics of injury prevention, coalition and community organizing, accessing available resources, and institutionalizing projects to continue when EMSC funding ends. We will use a decentralized approach that will allow both paid and volunteer EMTs to obtain technical assistance to identify local pediatric injury problems and resources, develop or join local coalitions, and implement and evaluate prevention programs. University technical support will be provided through telephone computer interfaces and onsite consultation. By emphasizing a grassroots approach, we will ensure that the content of programs developed reflects the particular needs of the community as well as the special developmental needs of children. EMS sources that serve minority and rural populations will be specifically targeted for direct technical assistance. Existing prevention materials will be available at no cost, and competitive incentive project moneys will be available. Nonmedical continuing education units will be offered as further incentives for prevention projects that meet specific criteria.

Evaluation

Methods to track and evaluate our progress will include the following:

1. An advisory committee, composed of key community leaders, that meets quarterly to advise on EMSC staff efforts and guide priorities;
2. A report on the number of EMTs recruited to coordinate and participate in community injury prevention projects;
3. A report on the frequency of use of national, State, and local resources;
4. The amount and type of technical assistance offered;
5. Reports of project type (intentional or unintentional) and the amount of money involved;
6. Development of monitoring and reporting of project-specific evaluations for incentive projects; and
7. The number of projects that continue when EMSC funding ends.

Experience to Date

Objectives achieved to date include: (1) Approval of continuing education units for EMT injury prevention training and activities; (2) completion of the statewide competitive funding announcement and

award of 10 grants; (3) expansion of the EMT handbook on injury prevention into a curriculum; (4) scheduling of three training sites and dates for the coming year; and (5) the establishment of an Injury Prevention Resource Center.

New York City EMSC-Pediatric Teaching Resource

Grantee
New York University

Project Number MCJ-364004

Project Period 10/01/94–09/30/96

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Problem

The problems of training prehospital personnel to care for children have been outlined in the Institute of Medicine report. Many of these problems are addressed in the new Emergency Medical Technician Basic (EMT-B): National Standard Curriculum. However, the leaders in emergency medical services (EMS) education recognize that EMS instructors do not currently have the knowledge, clinical experience, or educational resources to adequately teach the entire new pediatric content.

Goals and Objectives

The goals and objectives are to:

1. Create an educational resource that will enable emergency medical technician (EMT) instructors to effectively teach the pediatric portions of the new EMT-B curriculum.
   Objectives:
   a. Define the scope of pediatric knowledge necessary for EMT instructors teaching the new EMT-B curriculum;
   b. Develop the Instructor Resource for Teaching Prehospital Pediatrics (IRTPP) based on the EMT-B curriculum; and
   c. Distribute the IRTPP.
2. Evaluate the effectiveness of IRTPP in enhancing the EMT instructors' ability to teach the new EMT-B curriculum.
   Objectives:
   a. Create an evaluation tool to measure the effectiveness of IRTPP; and
   b. Assess the impact of IRTPP use on EMT-B curriculum instructors and students.

Methodology

A review board consisting of experts in emergency medical services for children (EMSC), EMS education, pediatrics, emergency medicine, pediatric surgery, and emergency nursing will be established. An outline for pediatric content of the new EMT-B curriculum will be submitted to the review board; the final outline will be based on the experts' input.

On the basis of the content outline, medical, EMS, and educational experts will write a working

draft of the IRTPP. One national workshop and three regional workshops will be presented to obtain input from EMT instructors who are the IRTPP target audience. The national workshop will be held in conjunction with the annual meeting of the National Association of EMS Physicians. The regional workshops will be held in New York City (urban center), Connecticut (suburban), and Puerto Rico (rural). Feedback from these workshops will be evaluated by the review board and incorporated into the final IRTPP draft.

Depending on the final document's length, between 5,000 and 10,000 copies will be distributed throughout the country via State EMS offices, professional organizations, the National Center for Education in Maternal and Child Health (NCEMCH), and the National EMSC Resource Alliance (NERA).

An evaluation instrument will be created to measure the IRTPP's effectiveness. This two-part process will consist of (1) a measure of change in student cognitive, psychomotor, attitudinal, and integrative performance; and (2) a measure of change in instructors' educational proficiency based on independent observation according to set criteria and student assessment of instructor performance.

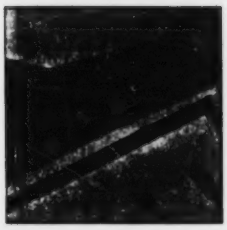
The evaluation instruments will be used to measure the educational impact of the IRTPP. This will be accomplished using a prospective, equivalent comparison experimental study design. Two instructor groups will be followed. The difference in both instructor and student performance will be measured using the grant-created evaluation tools. The anticipated observations are that: (1) There will be no difference between the first classes taught by the experimental and control instructor groups (confirmation of randomization); (2) the difference from the first to the second class taught by the control instructor group will be due to instructor maturation alone (measurement of maturation); (3) the difference from the first to the second class taught by the experimental instructor group will be due to instructor maturation *and* the IRTPP; and (4) in the second classes, the only difference in instructor and student performance between classes taught by the experimental and control instructor groups will be the IRTPP. By comparing these observations, we will be able to measure change in instructor and student performance due to the IRTPP.

Evaluation

Changes in instructor performance as well as prehospital provider knowledge, attitude, skill, and behavior will be measured. Grant-created assessment tools will be used. This evaluation will demonstrate the IRTPP's impact on EMT-B instructors and will assess improvements in EMT-B student performance. A positive evaluation will show that the IRTPP can have a significant impact on the delivery of pediatric prehospital care on a national level. Project activities will be tracked through regular meetings of project personnel to review the status of objectives and contributors' progress and to monitor related activities with respect to the targeted completion dates. Achievements will be measured by obtaining consensus by the investigators and the review board on the scope of knowledge as defined in the content outline; consensus by investigators and the review board on the final draft of the IRTPP; confirmation of IRTPP distribution via data provided by NCEMCH, NERA, and State EMS offices; consensus by educational consultants on the final version of the IRTPP evaluation instrument; and completion of the educational program, administration of evaluation instruments, and data analysis of the impact of the IRTPP.

Experience to Date

To date the content outline has been created. It is the basis for the 25 chapters that are currently in various stages of production. Drafts of 18 chapters are in hand, with 12 already presented at grant-sponsored workshops and evaluated using a grant-developed chapter review feedback form. A review board has been formulated including representatives from the National EMSC Resource Alliance, the Center for Emergency Medicine, the National Association of State EMS Directors, the National Council of State EMS Training Coordinators, the American College of Emergency Physicians, the National Association of EMS Physicians, Maryland Regional Pediatric Shock Trauma, the Emergency Nurses Association, the National Association of EMTs, the National Registry of EMTs, the American Academy of Pediatrics, and the American Pediatric Surgical Association. The workshop process has proven extremely valuable, so the numbers held are being increased. There is a delay in the roll-out and adoption of the new EMT-B curriculum by State EMS offices. Therefore, we will use this delay as an opportunity to further improve and refine the IRTPP.



Child Care Health and Safety Training and Network Development

Grantee
University of Oklahoma Health Sciences Center

Project Number MCH-404003

Project Period 10/01/95–09/30/97

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Problem

Oklahoma lacks adequate training in CPR/airway obstruction, first aid, injury prevention, and infection control for out-of-home child care facilities. The State also has an inadequate network of appropriate and available training for child care providers.

Goals and Objectives

The project will develop an ongoing training program for licensed child care providers in Oklahoma. The ultimate impact should be seen in the decrease of morbidity and mortality from injuries and a decrease in the incidence of communicable diseases in the 0–5 years population attending licensed child care.

Objectives are as follows:

1. By April 30, 1996, develop child care provider training and instructional materials for Oklahoma providers on first aid, safety/injury prevention, infection control, and CPR/airway obstruction;
2. By September 1996, develop and implement a statewide child care provider training network in Oklahoma using the EMSCRC EMTs and the county health department child care health consultants to conduct the training on the local level.

Methodology

Emergency medical technicians (Pediatric Advance Curriculum instructors) already trained through the EMSCRC project statewide will be linked with the Oklahoma State Department of Health's Health and Safety in Child Care project efforts to develop the training network and the recommended training materials, with special consideration for the unique needs of rural areas of the State.

Efforts will be combined with the DHS Office of Child Care, Licensing Unit; the Health Care Consultants at the county health departments; the four Child Care Resource and Referral Centers; the Oklahoma Child Care Association; the Red Cross;

the American Heart Association; and other providers of training to child care providers in the State. The intent is to establish a strong training network statewide to meet the needs of the child care community.

Evaluation

The project coordinator will be responsible for the establishment of an ongoing monitoring system for the evaluation of project objectives. Milestone analysis will be conducted each quarter by the project staff, including the project medical director, the EMSCRC coordinator, and the Health and Safety in Child Care project coordinator. The project's impact will be determined by the extent to which the project produces the intended results, as well as the development of training products, the system for conducting training with the target audience, and the long-term influence upon the infants and children of the State. The improved quality of the child care that Oklahoma's children receive is an ultimate outcome. Another outcome will be the marked improvement in the knowledge and ability of those providing child care in the State.

EMSC Data Enhancement Project

Grantee
University of Pittsburgh
Medical Center

Project Number MCH-424002

Project Period 10/01/94–09/30/96

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Problem

The recent report of the Institute of Medicine (IOM) on emergency medical services for children (EMSC) says that understanding and overcoming the EMSC information gap requires compiling data on the particular role that individual system components play in emergency care. Only by understanding and enhancing individual components can we take full advantage of the power offered by future linkage and integration of separate data components. The lack of standardized and representative data on the Nation's pediatric emergency department visits is one such critical information gap. Emergency departments are a core component of the emergency medical services (EMS) system; millions of children are treated each year in U.S. emergency departments. Virtually every EMS run involves a delivery to a hospital emergency department. Despite the pivotal role emergency departments play in the EMS system, however, no nationally representative data on them have ever been available. However, the National Center for Health Statistics (NCHS) has just completed the first national survey of emergency department medical care. The first year of survey data from the emergency department sample will be published in April 1994, but NCHS does not plan to conduct any specific analyses of variables for groupings of pediatric cases.

The IOM report says "inadequate EMSC data systems make it difficult to conduct the planning, evaluation, and research that are needed to determine whether children are getting the emergency care they need, when and where they need it." Part of this inadequacy stems from the difficulty administrators, planners, and other users have in accessing the increasing wealth of data generated by EMS data systems. Many States collect hundreds of thousands and even millions of computerized records from EMS run reports. Ironically, many of these States are so buried in the data and the data collection process that the information in the data bases is unused and thus wasted. Similarly, many people would like to procure certain parts of these data bases or explore the data for a multitude of purposes but find the data extraction mechanisms too

difficult to access, too slow, or too inflexible. Modern data base technology and commercially available natural-language (conversational-like English) data base querying could solve these EMS data access problems, but these methods have not been applied to data bases on reports of EMS runs.

Goals and Objectives

The first component of this project entails a child- and adolescent-specific analysis of 3 years of the NCHS emergency department survey data. This analysis will be compiled in booklet format to create the first national picture of pediatric emergency department patient characteristics, causes, diagnoses, and disposition. This data book will be disseminated nationally and targeted toward EMS practitioners, clinicians, injury control professionals, and others interested and involved in pediatric health services.

To address the EMS data base access problem, the project will create, test, and evaluate a prototype natural-language interface to an existing EMS run report data system. This prototype will include the capability to access many of the elements of the minimum standard data set developed recently by a National Highway Traffic Safety Administration consensus conference. This software will allow users to type queries on their computers in conversational English to obtain relevant data. For example, one would type: "How many children under the age of 18 in Allegheny County with bicycle-related injuries were transported between 6 p.m. and 11 p.m. in 1992? Show a pie chart of the gender distribution."

Methodology

To conduct the analysis of the NCHS survey data, 3 years of public use data tapes from the 1992–94 Ambulatory Emergency Department Medical Care Survey will be purchased. The injury data will be enhanced by the addition of a severity index (ICD-9CM to AIS crosswalk) and injury category cost modeling (derived from the 1987 National Medical Expenditure Survey). The data set will then be analyzed from the pediatric EMS perspective. This analysis will be used to prepare, in consultation with several national experts and organizations, a data book complete with photos, tables, charts, graphs, and narratives. The data book will be distributed in print and electronic form to EMS practitioners, clinicians, hospital administrators, public health officials, and others. The project will also highlight the need for State-specific emergency department data and will encourage expansion of the ongoing NCHS survey to be more relevant and to include linkage to prehospital care issues.

A natural-language interface will be developed and applied to the Pennsylvania EMS Ambulance Run Report data base. A commercial software package called Natural Language and associated hardware will be purchased and adapted to the variables in the Pennsylvania EMS data system to allow conversational English access to administrative, demographic, treatment, and incident data elements.

Evaluation

The data book will be evaluated through a reader response card. Reader satisfaction will be rated in several areas such as content, display, usability, completeness, and audience appropriateness. Distributions will be tracked to analyze orders by geographic location, profession, and date.

After development and testing, user satisfaction with the natural-language interface will be evaluated from the perspective of current users of the data base. Written questionnaires and personal

interviews will be conducted to ascertain interest, satisfaction, and expected use and utility of the new query system.

Experience to Date

The EMSC query system is currently under development. Equipment and software have been ordered and installed. Project personnel are onboard and the initial kick-off meeting for software beta testers has been held. Raw data from 1993 have been received from the State and will be imported into a relational data base. Plans call for beta testing in summer 1995 and a final version to be ready by fall. The end product will run on a PC networked to the centralized EMS data base. Demonstrations of this technology for EMSC will be available by late 1995 and 1996 through professional presentations, written articles, and automated software demonstrations.

Work on the data book has begun through initial exploration of the 1992 NHAMCS data base. Data import routines and data conversion methods are being developed. The principal investigator is working closely with colleagues in the injury field to ensure useful grouping of E-coded data. Preliminary analyses of 1 year of data have already highlighted the problem of dog bites to children and the lack of specificity among some mechanism groupings. Abstracts on both of these topics have been provisionally accepted for presentation at the annual meeting of the American Public Health Association.

Emergency Medical Services for Children: A Model for Knowledge Transfer and Utilization to the Yet Uncommitted

Grantee
University of Texas

Project Number MCH-484003

Project Period 08/01/95–07/31/97

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Problem

Many valuable innovations have been developed to address the needs of children in emergency systems. Emergency Medical Services for Children (EMSC) grants have provided many answers to previously unmet needs and have helped develop model educational programs and systems organization at every level of EMSC from injury prevention and prehospital care through rehabilitation. Although many products and innovations are available, use of these products is still less than optimal at the primary care physician level. The physician responsible for the medical home is in an excellent position to influence communities yet is uncommitted to EMSC systems development.

Goals and Objectives

The long-term project goals are to:

1. Encourage the establishment of committees on pediatric emergency medicine (PEM) in all appropriate chapters of the American Academy of Pediatrics (AAP);
2. Organize priorities from the Institute of Medicine (IOM) report on EMSC as described in the Maternal and Child Health Bureau (MCHB) 5-year plan to serve as a realistic and functional roadmap for implementing initiatives through state AAP-PEM chapters;
3. Ensure active participation of chapter PEM committees in addressing the priorities outlined in the MCHB 5-year plan; and
4. Evaluate the success of networking with chapter PEM committees in addressing the priorities of the IOM in the EMSC 5-year plan.

Methodology

An advisory committee will be established consisting of the representatives of the AAP, members of the national COPEM, and staff from the two national resource centers (NERA and NRC). The advisory committee will be responsible for reviewing the EMSC 5-year plan and prioritizing goals and objectives appropriate for the practicing pediatrician to implement at the local and State level. This

committee will develop the initial roadmap for implementation of priorities using existing grant products and the resources of the two national centers. The conduit for implementation will be the local chapter PEM committees.

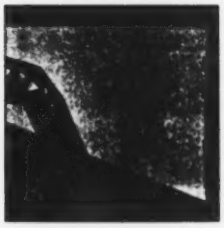
There are 20 States that have not yet established a PEM chapter committee. These States will be recruited by national COPEM members who will serve as facilitators in organizing and developing new committees.

Nine regional meetings will be organized using staff from the National Research Center and members of the national COPEM who will meet with chapter PEM chairmen in each of the nine AAP districts throughout the United States. These regional meetings will be designed to initiate bidirectional communication to analyze local needs and to compare these needs with national priorities established by the advisory committee. Coalition building will be stressed at the regional meetings to encourage cooperation between States.

During year 2, there will be continued individual consultation and ongoing support by regional COPEM representatives. Data will be periodically collected regarding the success of the program in achieving its goals.

Evaluation

An initial survey will be completed by all chapter COPEM chairmen using a modification of the EMSC needs assessment tool. Using a modification of this tool, an ongoing evaluation tool will be developed that describes indicators of successful function of chapter PEM committees and indicators of chapters meeting the EMSC 5-year plan's outlined priorities that are appropriate for action by practicing pediatricians.



Improving Primary Care Physician Education and Involvement in Emergency Medical Services

Grantee
University of Texas

Project Number MCH-484004

Project Period 08/01/95–07/31/97

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Problem

Current residency training provides little education on the emergency medical services for children (EMSC) spectrum encompassing emergency office preparedness, prehospital transport options to a local emergency department (ED), and interhospital transport to a tertiary care center. Despite this lack of training, graduates enter the community as presumed experts on all aspects of child care. Without education, it is unlikely that a practitioner will become involved in an established local emergency medical services (EMS)/EMSC system. Pediatric primary care providers (PPCPs) are, however, needed as child advocates for improving EMS systems for the benefit of their patient population, including children with special needs.

Goals and Objectives

Project goals are to:

1. Improve EMSC awareness and involvement through an EMSC curriculum developed and presented by pediatric emergency medicine (PEM) fellows and faculty for senior level pediatric and family practice residents.
2. Modify the EMSC curriculum for presentation to groups of existing PCCPs including pediatricians, family practitioners, emergency medicine physicians, physicians assistants (PAs), and nurse practitioners (NPs).
3. Prepare a package of written materials for residents and practitioners to facilitate their abilities to equip local ambulances, offices, and EDs in preparation for seriously ill children and to assist their teaching of prehospital and ED personnel in stabilization of children with certain frequently occurring crises and with special needs—language barriers or certain chronic medical conditions that are infrequently encountered but that require very specific care (such as home ventilators and tracheostomies).
4. Establish a State clearinghouse to coordinate ongoing educational presentations for residents and practitioners; revise, update, and distribute written materials; assist local prac-

titioners in identifying resources and deficiencies in their own EMSC systems; offer continuing support and encouragement for involvement in EMSC; and investigate methods of EMSC information and materials dissemination such as an Internet Home Page.

Methodology

An initial survey of current and recently graduated pediatric and family practice residents in the University of Texas Southwestern Medical Center at Dallas programs will determine current understanding of the EMSC continuum. This information, combined with the investigators' knowledge of current EMSC systems in North Texas, will direct curriculum development. Resident presentations will be performed by PEM fellows. The initial target group will be senior residents planning to enter primary care practice. The approximately 2-hour curriculum will be integrated into existing didactic schedules and will cover: (1) An introduction and overview of EMSC; (2) points of entry into EMSC systems; (3) office, ambulance, and ED preparedness; (4) community ED stabilization; and (5) transfer and transport decision-making and communication strategies.

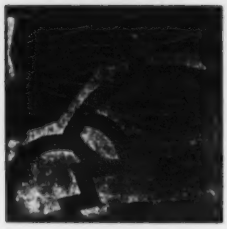
The survey will then be extended to include current practitioners. The curriculum will be modified and presented to PPCPs through local and State medical society meetings. Extension to PA and NP education programs will be part of this phase.

A significant aspect of these educational programs will be the provision of prepackaged materials to both residents and existing practitioners. The package will facilitate involvement of the practitioner in local EMSC systems by providing ready access to existing and newly developed EMSC manuals, courses and materials, equipment checklists, prehospital and interhospital transport protocols, EMSC access numbers, and scripted lectures for presentation to prehospital and emergency department personnel. Personalization of protocols for individual patients with special needs will emphasize the need to prevent misunderstanding of the child's condition and subsequent possible deterioration during care in the pretertiary center settings.

All curriculum and materials will be compiled as part of the development of a State clearinghouse that will coordinate ongoing educational presentations, update written materials, and maintain contact with practitioners. Internet access via a Home Page will be investigated to increase avenues of information dissemination. Curriculum and documents will be updated as needed with improvements and changes in available information. It is expected that after expenses for initial program and product development during the grant period, the project will be financially self sustaining through assessment of a reasonable fee for presentations and materials.

Evaluation

Initial and ongoing surveys of residents and practitioners will determine EMSC understanding and participation and will track expected improvements as the project progresses. Survey results will be used for initial curriculum development and for subsequent program modifications to suit different audiences. The project coordinator will maintain contact with program participants to determine: Usefulness of didactic and written materials in actual practice; activity level of participants in their local EMSC systems; and perceived need for didactic program updates or additional written materials.



Statewide Drowning Prevention

Grantee
Washington State Department of Health

Project Number MCH-534002

Project Period 10/01/94–09/30/96

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Problem

In the State of Washington during the 11-year period from 1980 to 1990, drowning ranked first among causes of unintentional injury death for children under 5 years of age, second for children ages 10–19, and third for children ages 5–9. On the basis of data from 1989–91, drowning is the second leading cause of injury death for children under 5 years of age and the third leading cause of unintentional injury death for children ages 5–19. From 1989 through 1991, 100 of Washington State's children under the age of 19 died from unintentional drowning. While the overall drowning rate has been decreasing in the State, pediatric drownings have not, and the rate is considerably higher than the national average. In 1992, the most recent year of statewide data, 42 children ages 0–19 died by drowning.

In Washington the many lakes, rivers, miles of coastline, and irrigation canals make drowning in open water the major risk. Open-water drowning has not previously been addressed by prevention efforts, yet it is a problem in many States. To date, national efforts and those of other States have, for the most part, addressed only pool drownings. Washington can no longer ignore its problem of open-water drowning and near-drowning among children.

Goals and Objectives

The goal of the project is to decrease the mortality and morbidity of children ages 0–21 years due to submersion incidents in Washington State over a 2-year period. The objectives to accomplish this goal are to:

1. Establish community-based drowning prevention programs across the State focused on one or more of the three drowning risk areas—boating, open water, and pools, spas, and hot tubs;
2. Disseminate water safety educational materials to children and their parents;
3. Increase life jacket use by children; and
4. Integrate drowning prevention into the State Emergency Medical Services/Trauma System (EMS/TS).

Methodology

Washington State's EMS/TS, located in the State's Department of Health, is the lead agency for this project. The Prevention and Systems Analysis Section of the State EMS/TS has an injury prevention specialist who works with the State's eight EMS/TS regional councils to implement injury prevention programs. Children's Hospital and Medical Center in Seattle, WA, is a partner in the project because of its medical expertise in drowning and the success of its Stay On Top of It program for child drowning prevention.

Drowning prevention program coordinators will be hired for each of the State's eight EMS/TS regions. Community-based coalitions will be developed to disseminate information. An age group will be targeted for an increase in lifejacket use and drowning prevention strategies will be implemented.

Existing EMSC project materials from other States will be used whenever possible. Existing water safety materials from Children's Hospital will be disseminated to the regional programs so they will not have to develop materials. In addition, educational materials will be developed for adolescents and for Hispanic and Native American populations, since essentially no educational materials exist for these groups. The actual methodology of distributing these materials will be determined at the local level, involving the coalition members.

Children's Hospital has a popular loan program and a discount coupon program to lower the cost of life vests. These will be expanded statewide through the regional programs.

The State's existing EMS/TS infrastructure will be used to expand and solidify injury prevention efforts within the State office and the regional councils. This will be accomplished by involving EMS/TS providers in the regional drowning prevention program activities.

Evaluation

Process evaluation criteria will measure movement toward the objectives. Outcome evaluation for a 2-year project cannot be based on mortality and morbidity data, because submersion incidents are relatively infrequent. A period of at least 5 years of steady decline in mortality and morbidity is necessary. Therefore, each objective will be measured as a proxy that its positive accomplishment contributes toward the project's ultimate goal. The outcome of objective 1 will be shown by evidence of development of the regional programs to include a coordinator, coalition, and goal and objectives with an implementation plan. Objective 2 will be measured with a survey tool developed to show knowledge change in parents and children from before each regional program begins prevention promotion activities, to the end of the first water season, and then to the end of the second water season (end of the 2-year project period). To measure the outcome of objective 3, a tool will be developed to show change in the number of children wearing lifejackets in boats and near open water, from a baseline measurement before each regional program begins prevention promotion activities, to the end of the first water season, and then to the end of the second water season (end of the 2-year project period). The outcome of objective 4 will be shown by evidence of EMS providers' involvement in the regional programs.

Experience to Date

Progress has been achieved in meeting the following project objectives:

Objective 1: A great deal of work has been done in meeting the individual needs and issues of the eight regions because of their wide range of interests and resources for the project. The objective has been accomplished by hiring and training regional coordinators, establishing community coalitions, and developing a work plan by seven of the eight regional programs. (The eighth region is serving as a control.)

Objective 2: The coalitions are disseminating educational materials and implementing prevention strategies in their communities. An Hispanic focus group has been held for materials development. Children's Hospital materials have been adapted for use by individual regions, and a community activities tracking form has been developed.

Objective 3: Life vest loan programs and bulk buy programs are underway and a manufacturer has donated 500 vests for program activities.

Objective 4: EMS councils have hired program coordinators in four regions. In one region, the coordinator is in the local health department, and works in close association with the EMS injury prevention coordinator; in another region, the coordinator is based in the regional pediatric Level I trauma center; in another, the coordinator is with Dive Rescue. All coalitions have EMS representation among their members.

The following materials have been developed (October 1, 1994, through April 30, 1995): *Drowning Prevention Training Manual, Child Activities Booklet, Day Camp Activities Guide, Life Vest Loan Program Guide,* April Pool's Day flyer and McDonalds Corporation tray liner, outline for the life vest presentation on *How to Do a Health Fair,* a legislative packet, and a training notebook developed by the project team for a 2-day training program.

Research Grants

Research is critical to ensure that the care that is provided to children is the best possible. Since its inception, the EMSC program has supported research, and in FY 1996 the program was able to expand the research portfolio substantially through an interagency agreement with the Agency for Health Care Policy and Research. As a result, four new grants were awarded, bringing to six the currently supported projects.

Quality and Cost Containment in Pediatric Intensive Care (AR) R01-HSO9055

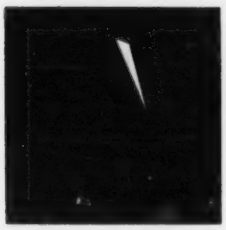
Prehospital Pediatric Intubation and Patient Outcome (CA) R01-HSO9065

Pediatric Prehospital Critical Care Skills Retention (OR) MCJ-410649

Applying Biomechanical Epidemiology to Injury Prediction (PA) R01-HSO9058

Cost Effective Emergency Department Screening for UTI in Febrile Children (PA) . . . . . .MCJ 420648

Epidemiology and Cost of Emergency Medical Services Provided to Children (UT) R01-HSO9057



Quality and Cost Containment in Pediatric Intensive Care

Grantee
Arkansas Children's Hospital

Project Number R01-HSO9055

Project Period 10/01/95–09/30/98

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Pediatric intensive care is the most expensive component of emergency medical services for children (EMSC). A report by the Institute of Medicine notes that pediatric intensive care units (PICUs) can incur substantial unreimbursed costs by caring for large numbers of uninsured children. Reimbursement problems may become severe as managed care insurance contracts rapidly increase in both private and public sectors. Services provided to children in pediatric intensive care settings may be vulnerable to cost containment initiatives resulting from unreimbursed costs. Cost containment initiatives may lower the quality of patient care by limiting the amount or type of resources used in patient care or the duration of the PICU stay. Research in adult intensive care unit (ICU) settings found significantly lower resource use for patients with managed care insurance compared to patients with fee-for-service insurance. Decreased resource use did not produce worse outcomes for adult ICU patients. This finding may not generalize, however, and could be misleading for pediatric intensive care. The effects of hospital reimbursement systems on resource use and quality of care have not been studied in pediatric intensive care.

This study investigates the relationship between cost containment and the quality of care in pediatric intensive care settings. The study will collect data prospectively for 2 years from three PICUs with managed care insurance rates that vary between 6 percent and 39 percent. Hospital reimbursement systems are expected to change rapidly during the study. Quality of care is assessed using both mortality and morbidity outcome measures. Mortality outcome measures may not have sufficient sensitivity for pediatric emergency medical systems analyses and may provide misleading results. We use morbidity measures derived from the newly validated Pediatric Overall Performance Category scale developed by one of the principal investigators in prior EMSC research. Use of the scale is limited, however, by lack of a severity measurement system designed specifically to predict morbidity. We will:

1. Develop a pediatric morbidity prediction system;

2. Document variations in pediatric intensive care mortality rates, morbidity rates, severity of illness/injury, and resource use based on the race and the insurance status of the patient;
3. Explain variations in mortality, morbidity, and resource use with age, race, gender, and illness/injury severity; and
4. Estimate relationships among insurance status, resource use, mortality, and morbidity.

The study findings will aid EMSC response to changing fiscal environments. In addition, the morbidity prediction model will be an important tool for case-mix adjustment for future EMSC applied quality assessment work as well as future EMSC clinical research.

Prehospital Pediatric Intubation and Patient Outcome

Grantee
Harbor-UCLA Medical Center

Project Number R01-HSO9065

Project Period 10/01/95–09/30/96

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Harbor-UCLA Medical Center's Department of Emergency Medicine, with the cooperation of the Los Angeles and Orange Counties' Emergency Medical Services (EMS) agencies, will evaluate the success rate, complication rate, and effect on outcome of prehospital pediatric airway management strategies in these large, urban EMS systems.

Project objectives are to:

1. Compare survival rates of patients treated with prehospital endotracheal intubation (ETI) and bag-valve-mask ventilation (BVM);
2. Measure the feasibility of the incorporation of ETI into the paramedic scope of practice in an urban EMS system by evaluating the success and complication rates of endotracheal intubation and BVM, by measuring the length of time these skills can be retained before retraining is needed, and by estimating the cost-per-hour per paramedic to provider agencies for continuing education of airway management skills;
3. Measure the self-efficacy of the urban paramedic in pediatric airway management skills and evaluate whether self-efficacy is affected by length of time since training, continuing education interventions, and frequency of skills used;
4. Evaluate the feasibility of the use of the proposed Pediatric Utstein Guidelines for Reporting of Pediatric Advanced Life Support by measuring compliance with data elements in prehospital care records of two urban EMS systems;
5. Compare patient outcomes other than survival (e.g., field scene times) in patients treated with prehospital ETI and BVM through prospective interviews with paramedics at the time of the patient encounter and retrospective chart review;
6. Estimate the cost-per-life-saved of the inclusion of pediatric ETI to the paramedic scope of practice; and
7. Establish a large, urban EMS research coalition.

Patients less than or equal to 12 years of age who are critically ill or injured requiring prehospi-

tal airway management are randomized to receive one of two standard airway management techniques: ETI or BVM.

Success and complication rate of each airway technique are determined prospectively by phone interviews with the paramedic and receiving hospital emergency physician and are recorded on a study data form. Logistic regression will be used to determine the effect of treatment strategy on patient outcome. Finally, the cost-per-life-saved of the inclusion of pediatric ETI to the paramedic scope of practice will be determined.

Pediatric Prehospital Critical Care Skills Retention

Grantee
Oregon Health Sciences University

Project Number MCJ-410649

Project Period 10/01/94–03/31/96

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Statement of the Problem

Optimal care of critically ill or injured children in out-of-hospital settings depends on the knowledge and skills of the emergency medical technician-paramedic (EMT-P). Pediatric emergencies, however, represent a very small fraction of EMT-P calls. Limited exposure to pediatric emergencies may result in the deterioration of necessary knowledge and skills.

Research Questions

This study aims to assess knowledge of pediatric resuscitation and deterioration of skills over the 12-month period following a pediatric resuscitation course, and to determine the effect of ongoing clinical experience and re-education on the deterioration in skill levels.

Specifically, the project will determine (1) the frequency with which EMT-Ps are exposed to specific pediatric emergencies, (2) the effect of ongoing clinical experience on knowledge and on skill deterioration, and (3) the effect of re-education and/or testing on knowledge and skill deterioration.

Study Design and Methods

We plan a prospective assessment of the test/retest performance of EMTs who have just completed the Oregon Pediatric Prehospital Critical Care Course. Participants will be assigned randomly to one of four continuing education groups. The groups will be retested on knowledge (written examination) or skills (mock resuscitation examination) or both, at 6 and 12 months. This design will allow us to measure separately the effects of non-intervention, traditional testing only, mock resuscitation testing only, and both modes of assessment on knowledge and skill retention. The effect of clinical exposure to critical pediatric cases will be evaluated as a potential confounder.

Applying Biomechanical Epidemiology to Injury Prediction

Grantee
Children's Hospital of Philadelphia

Project Number R01-HSO9058

Project Period 09/01/95–08/31/98

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Current measures of injury severity used for injury prediction in the acute care setting use physiological and clinical parameters that vary over time and have limited ability to predict occult injuries. It is hypothesized that pediatric injury prediction can be improved by incorporating variables describing the injury circumstances (e.g., speed and direction of impact) into the physiological measures. In this research project a pediatric injury circumstance evaluation (ICE) survey for pedestrians and bicyclists will be developed, administered, and correlated with clinical outcome to create the ICE score. Potential applications for the ICE score include: Triaging and formulating care plans in the prehospital and acute care settings; adjusting case mix for research or performance evaluation testing; validating biomechanical models of injury; and evaluating preventive initiatives. As a byproduct, this research will bring together injury researchers with backgrounds in pediatrics, surgery, epidemiology, statistics, and biomechanics. The broad, long-term objective is to create a pediatric injury circumstance scoring system for use in pediatric trauma triage, care, and research. Central to achieving this objective is the development of a new research approach, biomechanical epidemiology—the concurrent application of the principles of biomechanics and engineering to an injury control research problem.

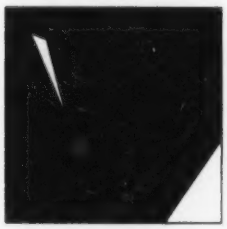
The specific aims of the project are to:

1. Incorporate biomechanical and epidemiological principles into the formulation of the ICE survey;
2. Pilot test, refine, and administer the survey and evaluate its use in a pediatric acute care setting; and
3. Create the ICE score from survey responses that predict actual physical damage to the child.

The research design is a prospective study for score development. Steps in score development include:

1. Survey construction based on epidemiological and biomechanical data on injury occurrence;
2. Administration of the survey to prehospital care providers, witnesses, relatives, and the injured child after pedestrian and bicycle-related injury events;

3. Review of survey performance using professional reconstruction of injury events as the "gold standard";
4. Modification of survey design to accommodate observed limitations in reliability; and
5. Correlation of survey responses with actual measures of physical damage to the child in the form of the Injury Severity Score and the Abbreviated Injures Scale (AIS-90) and creation of the ICE score. In a future study, a multicentered trial will validate the ICE score in predicting pediatric physical injury.



Cost Effective Emergency Department Screening for UTI in Febrile Children

Grantee
Children's Hospital of Philadelphia

Project Number MCJ-420648

Project Period 10/01/94–09/30/97

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Statement of the Problem

Emergency department physicians should have a low threshold for screening for urinary tract infection (UTI) since it is often present (even in children with an equivocal alternative source of fever such as viral illness or upper respiratory infection) and its sequelae are severe. While there is little consistent information about the prevalence of UTI among febrile pediatric patients in the emergency department, there is much debate about the most appropriate clinical and laboratory criteria for diagnosis. Currently, screening is uncomfortable for patients and its costs are significant.

Research Questions

This project will undertake a prospective study of febrile infants <1 year of age and febrile girls ages 1–4 years in a high-volume urban pediatric emergency department. The study aims to (1) determine the prevalence of UTI; (2) determine the usefulness of rapid screening tests for UTI; and (3) identify clinical predictors and develop clinical prediction models to stratify children at high risk for UTI.

Using information from the prospective study, published reports, and a modified Delphi survey of pediatric emergency department physicians, nephrologists, infectious disease experts, and urologists, the project will create a decision analysis model to determine cost-effective strategies for UTI screening in evaluating febrile young children in an emergency department setting.

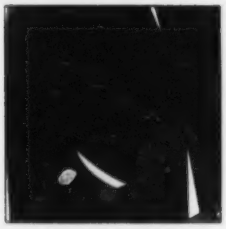
Study Design and Methods

This prospective cross-sectional concordance study will enroll all febrile infants <1 year and febrile girls ages 1–4 years (excluding those with an unequivocal source of fever) consecutively over a 2-year study period in the Emergency Department of The Children's Hospital of Philadelphia. The primary outcome measure for the study will be a positive urine culture. Clinical predictors will be obtained by the nurse or examining physician

using a pretested standardized data collection form. Interobserver reliability will be measured. The sample population will be characterized and prevalence rates determined. Sensitivity, specificity, and predictive value will be calculated for urine dipstick results performed on nonsterile urine obtained by urine bag and for enhanced and conventional urinalysis and dipstick on urine obtained under sterile conditions. The clinical prediction models, derived from multiple logistic regression, will be evaluated as a diagnostic test, using Receiver-Operator Characteristics curves.

A cost-effective decision analysis study will be conducted and will incorporate findings from the prospective study, medical literature, and expert opinion.

The study will help guide individual emergency department practitioners, institutional providers, and policymakers in reaching cost-effective management decisions about evaluation of the febrile young child for UTI, which is one of the most prevalent problems in pediatric emergency care.



Epidemiology and Cost of Emergency Medical Services Provided to Children

Grantee
University of Utah

Project Number R01-HSO9057

Project Period 09/01/95–08/31/98

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This is a population-based study of all Utah emergency medical services (EMS) runs and related hospital records in persons age 18 and younger for 1991–92. The study was designed to meet research needs concerning emergency medical services for children (EMSC) identified in a 1993 Institute of Medicine report. The study will build upon a previous research effort at the University of Utah, funded by the U.S. Department of Transportation, that examined injuries related to motor vehicle crashes 1991–92. Much of the necessary data has already been acquired and data-sharing agreements are in place for the remaining records. EMS, hospital outpatient, inpatient, regional poison center and police crash records will be matched using probabilistic matching software developed for the U.S. census.

The study will be population-based and will:

1. Describe the epidemiology of pediatric emergencies that use the EMS system;
2. Determine the cost of EMSC and related hospital care;
3. Examine the effect of EMS care and intervention on patient outcome;
4. Determine the cost and nature of EMSC aeromedical transport; and
5. Determine the effect of poison control center telephone consultation on subsequent EMSC and hospital care.

The epidemiology of EMSC for racial/ethnic groups, children with special needs, urban versus rural areas, and for type of EMS available will be defined for trauma and for detailed categories of pediatric illness. The study will include an outcome analysis of EMSC and will compare the care given by advanced life support EMS units before and after EMSC training that took place in Utah in early 1992. Separate analyses of EMSC care will be done for victims of motor vehicle crashes, children with respiratory illness, and children with poisoning.

Continuing Education Grants

Conference awards provide a mechanism for informing a variety of audiences about the needs of children in EMS and for developing coalitions to address those needs. The EMSC program has supported two such conference grants. The University of Kansas Medical Center sponsored the Midwest Regional Childhood Injury Prevention and Control Conference (MCT-209411) in 1995.

One project is currently active:

Intermountain Regional EMSC Coordinating Council Continuing Education Conference (UT) MCT-499403

Intermountain Regional EMSC Coordinating Council Continuing Education Conference

Grantee
University of Utah

Project Number MCJ-499403

Project Period 10/01/94–09/30/96

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Problem

The Intermountain Regional Emergency Medical Services for Children (EMSC) Coordinating Council (IRECC), formed during funding of the Utah EMSC Demonstration Project, consists of the eight States of Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming; IRECC meetings have also been attended by representatives from Oregon, South Dakota, Washington, and Texas. In March 1994, IRECC defined two major goals for the next 3 to 5 years: (1) Define the epidemiology of EMSC in the intermountain region; and (2) identify all injury-related interventions in the region, and assess the effectiveness of these interventions. IRECC also defined specific objectives aimed at accomplishing these two major goals.

It has become clear to IRECC participants that their ability to carry out these goals is limited by two factors: (1) Most of the IRECC participants do not have a significant research background. Indeed, there are technical gaps in knowledge with respect to epidemiology, injury prevention strategies, injury cost analysis, research design, and statistics (particularly the multivariate techniques needed for outcome research). (2) EMSC programs are not totally integrated into other State-level maternal and child health (MCH) programs or other State agencies. For example, EMSC programs are currently involved in injury prevention strategies in several intermountain States. These efforts will be strengthened by coordination with and involvement from injury prevention programs funded by the MCH Block Grant.

Goals and Objectives

The project's two major goals are to:

1. Increase the expertise of the IRECC participants in the areas of epidemiology, injury prevention strategies, statistical analytical techniques, and data linkage methodologies. These individuals would also be made more knowledgeable about State MCH programs, programs for children with special health needs (CSHN), and other Title V programs. This information will help IRECC members to better understand technical aspects of the

IRECC's initial goals (mentioned above) and will improve cooperation, coordination, and integration within individual States. This will allow IRECC participants to begin structuring detailed steps toward accomplishing all the objectives of IRECC.

2. Increase knowledge about EMSC among State-level individuals who have not previously been involved in regional EMSC activities. Such individuals may include State epidemiologists, injury prevention and school health specialists, parent-teacher associations, State hospital association leaders, rural health agencies, the Indian Health Service, legislators, educators, and individuals working within State MCH and CSHN programs and other Title V programs. Other important individuals to include are pediatricians, family practitioners, and nurses (office, emergency department, and school). This information will facilitate networks within individual States and the region with MCH and Title V programs, permitting IRECC objectives to begin operation at the State and regional levels.

These goals will be accomplished with three distinct annual conferences. In year 1, spring 1995, a conference will be held for 30 students. The target audience will be EMSC experts, IRECC participants, and Utah MCH personnel. IRECC participants will include all eight IRECC States. Because of previous IRECC participation, representatives will be invited from Oregon, South Dakota, Texas, and Washington. The purpose will be to increase EMSC experts' knowledge of epidemiology, research, design, injury cost analysis, trauma severity scoring, injury prevention techniques, statistical analyses, multivariate modeling, health outcomes research, data base linkage (probabilistic), and MCH and Title V programs.

Forty students will attend each of the conferences held in years 2 and 3, spring 1996 and 1997. The target audience will be non-EMSC experts, including individuals working in MCH, other Title V programs, school nurses, legislators, pediatricians, family practitioners, educators, injury prevention specialists, nurses, and State epidemiologists. The audience will be restricted to Colorado, Idaho, Montana, and Wyoming in year 2. The audience will be restricted to Arizona, Nevada, New Mexico, and Utah in year 3. The purpose will be to increase the knowledge of non-EMSC experts in various areas of EMSC, including the size and seriousness of the injury problems in childhood, the years of potential life lost from childhood injuries, the effect of EMSC on reducing injury mortality and morbidity, the educational needs of EMSC providers, the costs of childhood illness and injury, available curriculums, the Institute of Medicine report on EMSC, and national funding opportunities in EMSC. All the EMSC programs in the region will present summaries of State accomplishments during their funding periods.

Methodology

The specific curriculums for the first conference will be finalized and approved by the participants from Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, South Dakota, Texas, Utah, and Wyoming who attended the IRECC meeting in September 1994 in Colorado. At that meeting, the precise timing of the spring 1995 meeting will be determined in order to avoid conflict with regional emergency medical services (EMS) meetings and the national EMSC meeting.

The specific curriculums for the second and third conferences will be developed by all eight IRECC States, with particular attention from the target States for each conference. The purpose of these

meetings is to build networks with non-EMSC individuals, and the timing of these meetings will be planned with regional sensitivity in order to achieve maximum attendance by the target audiences.

The specific curriculums for these conferences are not completely defined. However, possible topics and time allocations for each conference are as follows:

Year 1, spring 1995: Summary of Title V programs in the region, 2 hours; epidemiological principles for EMSC applications, 3 hours; injury severity scoring systems (ISS, AIS), 2 hours; injury cost analysis, 3 hours; data base linkage methodology (probabilistic), 2 hours; developing realistic research questions, 2 hours; interpretation of vital statistics data, 1 hour; effect of seatbelt overreporting in motor vehicle crashes, 1 hour; effective research design, 2 hours; public policy and advocacy, general approaches, 2 hours; structure of MCH program nationally, regional resources, 1 hour; and use of the Centers for Disease Control and Prevention Wonder program, 1 hour.

Years 2 and 3, spring 1996 and 1997: Summary of Institute of Medicine report, 3 hours; pediatric training of regional EMS personnel, 2 hours; review of the EMSC programs in each State, 6 hours; curricular materials developed by regional EMSC programs, 3 hours; EMSC legislative experiences in the region, 2 hours; EMSC data bases in the region, 1 hour; outcome from EMSC care, 1 hour; patterns of EMSC care in the region, 1 hour; State-specific workshop sessions, 2–3 hours; public policy and advocacy, specific State-level approaches, 2 hours; and differences between children and adults, EMSC as part of EMS, 2 hours.

Since this project focuses on the EMSC efforts of eight States, the conferences will be closely coordinated with IRECC. This organization includes the EMS directors of each of the States or the State EMSC project directors. The conferences will be closely coordinated with the director of family health services in Utah, who oversees the MCH programs in Utah. As noted above, the curriculum for each meeting will be designed by IRECC with active help from the director of family health services.

Evaluation

Each conference will have a detailed pretest and posttest, which will permit an evaluation of how well each conference and component educational activity has achieved its predefined educational objectives. Evaluation results will be used to alter faculty or methods of informational delivery as appropriate.

There will also be a detailed evaluation of each meeting by the participants, dealing with issues of perceived value of the conference in total, details concerning the site of the conference, and other mechanical issues related to the meetings.

Finally, there will be a 6-month followup with each of the participants by questionnaire to determine if the conference has had a lasting impact on the professional activities of the participants. For example, each participant in the first conference may consider the session on research design to have been superbly conducted, but it will be of interest to know if anyone is using the concepts 6 months later. The evaluation will also assess networking that has resulted from the conferences, in order to determine lasting impact on cooperation between EMSC programs and MCH and other Title V programs in individual States. Finally, the evaluation will examine whether the conferences have contributed to cross-State cooperation in EMSC or MCH programs related to EMSC.

Experience to Date

The first meeting was held outside Salt Lake City, UT, in May 1995, concentrating on research design and statistical analysis issues facing EMSC experts. This conference was attended by 34 participants, including EMSC experts from the Intermountain States as well as Texas, Illinois, and Missouri. The curriculum concentrated on research design, epidemiology, statistical methods, and data analysis. Dr. Scott Williams and associates from the Utah Division of Family Health Services provided lecture materials on Title V programs in the region. Dr. Ellen MacKenzie was invited as an external speaker from Johns Hopkins University and provided much of the research and statistics curriculum. An external speaker was also invited to provide detailed tutorial instruction on the use of CDC Wonder, enabling participants to have a hands-on introduction to this important epidemiologic resource at the Centers for Disease Control and Prevention in Atlanta, GA.

Evaluation of this conference by participants was overwhelmingly positive. Each lecture and speaker was rated, and computerized summaries indicated positive scores between 3.0 to 3.6 on a scale of 0 (poor) to 4 (excellent) on six major evaluative questions. No participants considered any of the content or any speakers to be too basic, academic, or outdated, while two participants considered the conference to have been too complex. None considered the pace of the course too slow; two considered the pace to have been too fast.

Completed Projects

EMSC grant funds have provided States with seed money, allowing them to implement local activities and to improve pediatric emergency care. Some States have institutionalized EMSC through regulatory or legislative changes. Others have developed strong community support to ensure that the needed changes are made and that improvements continue beyond the end of the grant. EMSC funds have also been used to support demonstration, targeted issue, continuing education, and research projects.

This section describes those completed projects supported through the EMSC program. For more information about these projects, please contact the National EMSC Resource Alliance (NERA). A list of all completed projects is included in the appendix.

Demonstration Projects for Pediatric EMS Systems Components

Grantee
University of South Alabama
College of Medicine

Project Number MCH-014001

Project Period 02/01/86–01/31/89

State Alabama

The overall project goal was to demonstrate effective models for the necessary components of an emergency medical services for children system and the integration of those components into currently operating adult-oriented systems. The project comprised seven subprojects whose activities included: Educating the public, the prehospital care provider, and the rural physician about the assessment and management of pediatric emergencies; comparing the efficacy of ground versus air transport; defining the degree of psychological impairment caused by head injury; identifying local, regional, and national rehabilitation facilities; and increasing compliance with safety belt/child restraint legislation.

Alaska EMS for Children

Grantee
Alaska Department of Health
and Social Services

Project Number MCH-024001

Project Period 10/01/89–09/30/92

State Alaska

During the project period, 19 local and State injury prevention projects were funded, ranging from projects in Alaska's largest cities to projects in small rural villages. Because of Alaska's size and the numerous rural, isolated villages, many pediatric emergency patients must be transported long distances to higher level medical facilities, most often by air transport. Partly in response to this, the project developed the *Alaska Medevac Manual*, containing a wealth of information about transporting pediatric patients. The *Alaska EMS for Children Discharge Planning Manual* and the *Family Resource Guide* were developed to ensure the adequate provision of home aftercare and rehabilitation, especially in rural areas of the State.

Arizona Emergency Medical Services for Children

Grantee
University of Arizona

Project Number MCH-044001

Project Period 10/01/92–09/30/95

State Arizona

Arizona EMSC project personnel and coalition groups participated in more than 200 educational presentations, more than 50 injury prevention programs, and 6 PALS courses, involving more than 100 EMS agencies, almost 1,000 emergency health care providers, almost 200 parents, and more than 10,000 children. Investigators conducted workshops at national injury control conferences, and sat on key advisory committees that affect EMSC-related issues.

Demonstration Project: Emergency Medical Services for Children

Grantee
University of Arkansas for Medical Sciences

Project Number MCH-054001

Project Period 10/01/87–09/30/91

State Arkansas

A prospective data collection network was set up with 10 representative Arkansas hospitals to help identify the types of emergencies with the highest morbidity and mortality. The data base includes information on more than 10,000 children who have received emergency treatment for injury or illness. The project also developed courses to improve professional education in pediatric emergency care for physicians, nurses, paramedics, and emergency medical technicians (EMTs). In addition, three sets of algorithms for pediatric emergencies for use by hospital providers, prehospital paramedics, and prehospital EMTs have been distributed to all Arkansas hospitals and every licensed ambulance service in the State.

A Prospective Randomized Study of the Effect of Prehospital Pediatric Intubation on Outcome

Grantee
Research and Education Institute, Inc.

Project Number MCH-064004

Project Period 10/01/93–09/30/95

State California

As part of this project, two nurse educators educated nearly 2,800 paramedics in Los Angeles and Orange Counties in advanced pediatric airway management. Educational objectives were identified and a curriculum was developed, consisting of didactic, interactive, and mannequin training sessions for a total of 6 hours. A 24-minute video, *Airway Management for the Pediatric Patient*, was produced. More than 350 of the nearly 2,800 paramedics in both counties were educated in pediatric airway management, and project investigators are evaluating the success rate, complication rate, and effect on outcome of prehospital pediatric intubation and BVM ventilation used by these trained paramedics in the field. The key to the success of this project was collaboration and ongoing communication among investigators, EMS agencies, paramedic provider agencies, nurses, physicians, and paramedics from the initial planning phases through the implementation of the project.

Emergency Medical Services for Children

Grantee
California Emergency Medical Services Authority

Project Number MCJ-064002

Project Period 10/01/91–11/30/94

State California

The goal of this 2-year targeted issue project was to develop statewide EMSC guidelines and recommendations for clinical and operational components of local and regional pediatric emergency and critical care systems. The project produced the *California EMSC Model*, a comprehensive report listing new EMSC guidelines and recommendations. These guidelines and recommendations were adopted as the State guidelines by the commission on EMS. One EMSC project subcommittee addressed a special needs population—adolescents at risk for HIV—through a task force based at San Francisco General Hospital and coordinated with ongoing San Francisco pediatric and adult HIV programs. A conference was sponsored to highlight the special problems of this population's access to pediatric emergency and critical care services and to advocate for improved resources in ambulances and emergency departments.

Emergency Medical Services for Children in Rural and Urban Settings

Grantee
California State Department of Health Services/Harbor-UCLA Medical Center

Project Number MCH-064001

Project Period 02/01/86–05/31/89

State California

This project was designed to develop an emergency medical services for children program in California. All of the material and protocols developed were implemented in California, and ongoing mechanisms have been developed. Material and newsletters have been shared at the national level. Publications include: (1) *Prehospital Care of Pediatric Emergencies: Management Guidelines*, (2) manuals for the development of urban and rural EMSC, (3) a pediatric medical/trauma severity scoring system, (4) an outline for an educational program, (5) guidelines for secondary transport of critically ill children, (6) a pediatric prehospital care equipment and supply list, and (7) preliminary data on outcomes of children and cost of prehospital care. An ongoing newsletter was established sharing information on California EMSC projects.

Colorado EMS for Children Grant

Grantee
Colorado Department of Health

Project Number MCH-084001

Project Period 10/01/92–09/30/95

State Colorado

An interactive video disk (IVD) training project was conducted in the northwestern part of the State to train rural emergency service personnel. Two pediatric prehospital care instructor/trainer seminars on course presentation were presented to prepare approximately 120 instructors from about 45 medical training facilities. A number of injury prevention coalitions developed, and 100 statewide EMS professionals attended an injury prevention coalition-building seminar.

Emergency Medical Services for Children—Focus on the Neurologically Impaired Child

Grantee
George Washington University

Project Number MCH-114001

Project Period 10/01/87–09/30/91

State District of Columbia

This project focused on neurologically impaired children with the expectation that the enhancement of emergency medical services for children would reduce the morbidity and mortality for children with acute illnesses and injuries. The project addressed the consequences of traumatic brain injury (TBI) in children and the necessary rehabilitation services for these children and their families. Efforts were made to identify the actual residual effects of TBI in children with mild, moderate, and severe injuries. Postdischarge services required and received by study children and their families for reintegration into the community were reviewed. Various resources for professionals providing care for children with TBI were developed.

Pediatric Emergency Medical Services

Grantee
Institute of Medicine, National Academy of Sciences

Project Number MCJ-117025

Project Period 10/01/90–07/31/93

State District of Columbia

The project focused on two topics: (1) Establishing the essential components of a system of emergency care for children in a way that could better identify where the system was failing children; and (2) defining information and information systems that would facilitate assessments of the quality of care and cost-effectiveness of resource allocations. In an 18-month study, the Institute of Medicine (IOM) assessed the nature and extent of the problem of pediatric medical and trauma emergencies and their outcomes; described the current state of services in providing effective care; addressed standards and data needs for surveillance and evaluation of services and outcomes; and recommended policy mechanisms to promote development of better systems of care. A 19-member committee of individuals with expertise in pediatrics, emergency medicine, trauma, nursing, prehospital emergency services, injury prevention, rehabilitation, hospital administration, public policy, and local government provided guidance. A report, *Emergency Medical Services for Children*, was issued by IOM in 1993.

Pediatric Emergency Medical Services Training Program

Grantee
Children's Hospital National Medical Center

Project Number MCJ-113564
Project Period 12/01/84–11/30/88
State District of Columbia

This program was developed to supplement the 3 out of 110 hours in pediatric and childbirth training mandated by the the U.S. Department of Transportation's curriculum standards for basic emergency medical technician (EMT) training. The project trained EMTs who were nominated by State EMS directors and who returned to train other EMTs in their States. A variety of EMT instructors (including training coordinators, full-time instructors, and part-time instructors, paid or voluntary) attended the program. Audiovisual aids were made available to graduates for their use in local training. By the end of 1988 the project had trained 190 emergency medical technicians.

Emergency Medical Services Grant for Children

Grantee
University of Florida College of Medicine

Project Number MCH-124001
Project Period 10/01/87–06/30/91
State Florida

Emergency medical services for children were evaluated by coordinating the clinical, research, and educational efforts of the three major components of pediatric emergency care: Pediatric critical care medicine, pediatric emergency medicine, and pediatric trauma care. The pediatric population requiring emergency care was defined by combining existing component data bases into a single system to record epidemiologic, demographic, socioeconomic, and physiologic characteristics of children presenting for emergency care in northeast Florida. Outcome was evaluated by accumulation of physiologic data from the prehospital, inpatient, and postdischarge stages of care and attempts to validate the applicability of various physiologic scoring assessment systems to address each of these stages. The educational efforts of each component were combined and augmented to refine and improve dissemination of pediatric prehospital care courses for physicians, nurses, and allied health professionals.

Evaluation of Interventions in Childhood Brain Injuries

Grantee
Georgia State University

Project Number R18-MH47958
Project Period 09/1/90–08/31/94
State Georgia

This project strove to determine what combination of child- or family-focused treatment was effective in promoting positive outcomes in children ages 6–15 who had recently sustained a moderate to severe traumatic brain injury (TBI) and who were at significant risk of developing chronic emotional and behavioral problems. An experimental group completed at least 16 weeks in the Transitional Classroom Program at Georgia State University and their families received a range of family treatment, including family therapy. A program for in-classroom group therapy was developed and a procedural manual was produced. Training workshops were conducted for educators and mental health professionals on intervention for children with TBI. In addition, a referral and service system was developed to fill the gap between acute care in the hospital and the return to community schooling.

Emergency Medical Services for Children

Grantee
Hawaii Department of Health

Project Number MCH-154001
Project Period 10/01/87–09/30/91
State Hawaii

A comprehensive plan was developed to reduce the consequences of critical illness and injury in the pediatric population. A quality assurance system was developed to monitor all aspects of EMSC in the State of Hawaii. Changes were made through improvement of services, education at all levels, and legislative action. Specific grant activities included curriculum development and formal educational programs for training first responders, prehospital personnel, nursing staff, and physicians in the critical skills necessary for managing pediatric emergencies. Standards for equipment, drugs, and skills were developed for facilities providing emergency pediatric services. All project activities were particularly sensitive to addressing the needs of the unique aspects of Hawaii's population, including the transient tourist and military populations, the varied immigrant groups, and the native Hawaiian residents. The role of the professional community of Hawaii in providing services and consultation to the entire Pacific Basin received special consideration. Activities addressed the needs of a resort and tourist community, and these activities may serve as a model for States with similar resort and tourist communities.

Idaho Emergency Medical Services for Children

Grantee
Idaho Department of Health and Welfare

Project Number MCH-164001

Project Period 10/01/89–06/30/94

State Idaho

The Idaho Emergency Medical Services for Children (EMSC) project implemented regional EMSC committees to address systems development issues. EMSC training and public education/prevention programs were implemented for four Native American groups. A statewide bicycle injury prevention program was successfully implemented.

Pediatric Medical Emergencies Interactive Videodisc Program

Grantee
Idaho Department of Health and Welfare

Project Number MCJ-164002

Project Period 10/01/91–12/31/94

State Idaho

The goal of the project was to reduce the mortality and morbidity experienced by children in emergency medical situations, through improved training of emergency medical services personnel using new interactive multimedia technology. This project resulted in the design and production of a courseware program for prehospital emergency medical services personnel to help maintain their life-saving knowledge and skills.

Illinois Emergency Medical Services for Children Needs Assessment Survey

Grantee
Loyola University of Chicago

Project Number MCJ-174001
Project Period 10/01/94–09/30/95
State Illinois

Loyola University of Chicago, in collaboration with the Illinois Department of Public Health, established an emergency medical services for children (EMSC) system in Illinois. A coalition of individuals and agencies completed a needs assessment while developing a data collection mechanism that permitted monitoring and refinement of an EMSC program; and provided for ongoing leadership through an advisory board that addressed educational and training deficiencies of health care providers, public awareness of pediatric needs, and research activities that sought new solutions to old problems.

Midwest Regional Childhood Injury Prevention and Control Conference

Grantee
University of Kansas

Project Number MCJ-209411
Project Period 10/01/94–09/30/95
State Kansas

The conference goal was to increase the knowledge, skills, and abilities necessary to reduce intentional and unintentional childhood injuries in the Region VII States and communities. Seven of the *Healthy People 2000* objectives that relate to childhood injury were addressed. National and regional experts in injury prevention and control presented current research on childhood injury and effective intervention programs. Continuing education was offered to MCH professionals working in public, private, and voluntary settings at State and local levels and to other injury prevention professionals such as community mental health workers and law enforcement, fire, and emergency personnel. Participants explored strategies for local collaboration and grassroots activities and networked with professionals from other disciplines.

Emergency Services for Children for Louisiana

Grantee
Tulane University School of Medicine

Project Number MCH-224001

Project Period 10/01/89–09/30/91

State Louisiana

The project focused on developing a statewide system for emergency pediatric care. Particular attention was paid to the emergency medical care needs of children with disabilities and those who required chronic ventilatory assistance. Training sessions were held to upgrade the level of knowledge and experience of prehospital personnel. Another component of the project was to develop a computer system to permit long-term collection of Louisiana-specific data on pediatric emergencies. The project collaborated with the State Bureau of Emergency Medical Services to review education and training standards, equipment standards, staffing issues, and access to pediatric emergency medical services. In addition, the project was involved with the Orleans Parish Medical Society, the Jefferson Parish Medical Society, and the Metropolitan Hospital Council to review triage protocols for pediatric patients. A pediatric emergency symposium, directed at health care providers and the general public, was held in conjunction with the national Year of the Child in Emergency Medical Services campaign, generating significant media exposure for the issue.

Emergency Medical Services for Children

Grantee
Maine State Board of Emergency Medical Services

Project Number MCH-234001

Project Period 10/1/87–09/30/91

State Maine

A major accomplishment of this project was training programs that emphasized stabilization and evaluation of critically injured children. Strategies included statewide television programs on pediatric EMS issues and intensive central office support for initial programs. The basic EMT curriculum was modified to include core pediatric information. More than 400 providers were trained in the PALS program, which was adopted in the project's second year. Training was carried out for all squads serving Native American Reservations and two programs addressing the needs of persons with disabilities were televised statewide.

Maine Pediatric Quality Assurance Project

Grantee
Maine Emergency Medical Services

Project Number MCJ-234002
Project Period 10/01/91–12/31/93
State Maine

To develop an ongoing pediatric quality assurance system for emergency medical services for children in Maine, this project focused on: (1) Integrating pediatric quality assurance activities into the State's existing emergency medical services quality assurance program; (2) integrating the pediatric outreach program into the division of maternal and child health programs, analyzing clinical and outcome data, and providing continuing education to hospitals covering 80 percent of the State's pediatric admissions outside of Maine Medical Center; and (3) improving Maine's capacity for an integrated analysis of pediatric care, from prevention through rehabilitation.

Organization for Comprehensive Emergency Medical Services for Children in Maryland

Grantee
University of Maryland at Baltimore

Project Number MCH-244001
Project Period 10/01/87–09/30/91
State Maryland

This project constructed a system of emergency medical services for children with life-threatening illnesses and injuries in the State of Maryland. These efforts represented an extension of the statewide pediatric trauma system that had been operational for more than 15 years and integrated other regional pediatric critical care activities. In addition, attention was focused on the organization and improvement of existing emergency medical services for pediatric critical illness. This pediatric critical illness supplement was a natural evolution of experience with pediatric trauma, neonatal transport, and pediatric burns, all of which are ongoing components of the Maryland Institute for Emergency Medical Services Systems.

Michigan Model for Improving Pediatric Emergency Medical Services

Grantee
Michigan Department of Public Health

Project Number MCJ-264001
Project Period 10/01/91–09/30/94
State Michigan

The project strived to reduce the number and the impact of childhood injuries, especially those due to fires and violence. Broad objectives included training emergency providers, public/student education, smoke detector battery distribution, and school injury reporting. Materials developed included a 1993 injury prevention calendar, a statewide curriculum for pediatric emergencies, and data reports on prehospital and inpatient studies. A seminar was conducted for 136 instructor-coordinators on pediatric emergencies; the pediatric emergency management curriculum was published; 10,000 injury prevention calendars were distributed to hospitals statewide; latchkey "survival" training was sponsored in 13 elementary schools; 250 smoke detectors and 1,500 batteries were distributed; and a Kids Say No to Guns program was implemented at Children's Hospital.

Emergency Medical Services for Missouri Children

Grantee
Missouri Department of Health

Project Number MCJ-294001
Project Period 10/01/91–12/31/94
State Missouri

As part of this project, 67 paramedics have completed the PALS courses and a core of 15 St. Louis City paramedics have completed the PALS instructor program. Three workshops were held to orient 60 nurses to the self-learning nursing modules; distribution of the modules took place immediately after the workshops. The coordinator for the regionalization, prevention, primary care, and immunization components of the project conducted outreach programs in Illinois to educate referring hospitals about the EMSC initiative.

Nevada EMSC Implementation Project

Grantee
Nevada Health Division

Project Number MCJ-324001

Project Period 10/01/91–09/30/94

State Nevada

The project addressed the need to integrate comprehensive pediatric training into the existing curriculum for prehospital personnel and to expand the knowledge of emergency department personnel in the assessment and care of sick or injured children. Prehospital and hospital data sets were linked to monitor the effectiveness of both the education and prevention components of the project. In the first 2 years alone, 150 paramedics, 184 EMTs, and 40 emergency department nurses completed EMSC courses administered by the project. A prehospital curriculum and emergency department nurses' curriculum were identified, and work groups adapted course materials to suit the needs of Nevada pediatric emergency care providers.

New Hampshire Emergency Medical Services for Children Project

Grantee
Dartmouth College

Project Number MCJ-334001

Project Period 10/01/91–12/31/94

State New Hampshire

This project developed a successful prehospital pediatric trauma course to improve prehospital care providers' knowledge and skills in dealing with pediatric emergencies. Another course, Planning to Avoid Childhood Emergencies (PACE), was developed for emergency care providers to teach in their local communities. PACE included prevention information, as well as information on how to identify a real emergency, how to access the EMS system appropriately, and what kinds of equipment and supplies should be included in a first-aid kit. The project's pediatric subcommittee developed a preliminary pediatric trauma plan for the State. The pediatric committee also developed minimum standards for hospitals providing emergency pediatric care and tertiary emergency care and developed a set of pediatric trauma triage criteria.

Pediatric Emergency Medical Services System Development for New Jersey

Grantee
New Jersey Department of Health

Project Number MCJ-344001
Project Period 10/01/91–03/31/95
State New Jersey

The project had two components: Part 1, based in the New Jersey Department of Health's Office of Emergency Medical Services, coordinated project efforts and served as a focus for emergency medical services for children in the State, including children with special health needs and minority children and their families. Part 2 involved the State's emergency medical services community in three subcontracts that addressed (1) training for emergency medical technicians, paramedics, physicians, and nurses; (2) pediatric trauma issues; and (3) pediatric illness issues. One highlight was the passage of New Jersey's law concerning EMSC, the first such legislation in the country. Since development of new curriculums for both basic and advanced prehospital providers proved too cumbersome, the North Carolina EMSC project's prehospital programs were replicated once New Jersey's critical illness and trauma protocols were approved.

New Mexico Emergency Medical Services for Children

Grantee
University of New Mexico

Project Number MCJ-354001
Project Period 10/01/90–06/30/94
State New Mexico

This project focused on: (1) Increased childhood injury prevention programs statewide; (2) improved clinical care in the pediatric/emergency system, including prehospital and hospital care providers; (3) improved data collection and analysis; and (4) coalition building. Project activities included introducing a pilot program on interpersonal violence prevention that involved students, families, school staff, and administrators at a local middle school; raising public awareness about the importance of firearm safety; and developing self-sustaining rent-to-own child restraint programs around the State for public health clinics, hospitals, and Indian Health Services. A Rural and Minority Outreach Task Force helped to bring health fairs to rural communities, empowering local health resources to use injury prevention strategies and highlighting appropriate use of the EMS system. A bilingual health educator was hired to work with the Gallup Indian Health Service on the Navajo Reservation and a pediatric emergency medicine specialist was hired to initiate cross-training seminars for emergency medicine and pediatric residents. In addition, a pediatric paramedic instructor was devoted full-time to pediatric EMT training issues.

Development of a Regional Pediatric Data Surveillance System

Grantee
University of Rochester

Project Number MCJ-364002

Project Period 10/01/91–03/31/94

State New York

As part of the development of a regional pediatric data surveillance system in New York, the project refined and expanded the Pediatric Emergency Registry data base, performed site visits to all hospitals in the region, generated individual hospital and regional data analysis reports, and developed programming techniques.

Improvement of Emergency Medical Services for Children Demonstration Program

Grantee
State of New York Department of Health

Project Number MCH-364001

Project Period 02/01/86–01/31/89

State New York

For this project, three target regions (Albany region, New York City, and Rochester region) were selected as demonstration sites for the development and testing of various program modules. Standards were developed for categorizing urban and rural hospitals as receiving centers for the care of critically ill pediatric patients in all three regions. Modules in pediatric emergency care for both basic and advanced emergency medical technicians (EMTs) were developed. In one region, management guidelines were developed and implemented for children presenting with cardiac arrest, respiratory emergencies, or multiple injuries. Emergency department personnel were trained in the management of such pediatric patients, and a pediatric emergency registry was implemented. Pediatric treatment protocols were developed and implemented along with a training program for managing pediatric emergencies admitted to the emergency department. In two regions, a parent/caregiver training program was developed and presented to child care center workers and certain parent groups. A pediatric emergency hotline for use by physicians, nurses, and other medical personnel, including a manual containing instructions on how to manage particular emergencies by telephone, was developed in one region.

New York City Emergency Medical Services for Children Project

Grantee
New York University

Project Number MCJ-364003
Project Period 10/01/91–12/31/93
State New York

The three primary project goals were to: (1) Evaluate the pediatric advanced life support component of New York City's emergency medical services system, (2) enable New York City paramedics to intubate all children regardless of age, and (3) develop a quality assurance mechanism for pediatric advanced life support that would continue after the funding period and serve as a model for other EMS systems. An expert panel was assembled to evaluate the pediatric advanced life support component of New York City's EMS system, comprising six physicians who represented the spectrum of pediatric emergency medicine. Another expert review panel was established to develop a model quality improvement mechanism for pediatric advanced life support. A teaching package was developed to train New York City paramedics to intubate pediatric patients. Paramedic instructors were trained in the use of these teaching materials and, in turn, trained other New York City paramedics in pediatric prehospital endotracheal intubation. Educational assessment tools were developed with the help of a professional educator, and were tested during the training program for instructors.

Specialized Family Emergency Room Program with Suicide Attempters

Grantee
Research Foundation for Mental Hygiene

Project Number R18-MH48059
Project Period 09/01/90–08/31/95
State New York

The project, one of two EMSC projects cofunded with the National Institute of Mental Health, demonstrated that an emergency room-based intervention could have a positive impact on the amount of followup treatment received by female adolescent suicide attempters and their families. The project developed a manual for staff training, a videotape entitled *A New Beginning*, and *Successful Negotiations/Acting Positively*, a therapy manual focusing on cognitive and behavioral family therapy. Manuals for emergency room staff treating suicidal adolescents and their families were distributed to training staff within Columbia Presbyterian Medical Center. Approximately 350–400 manuals have been distributed to pediatric psychiatry fellows, pediatric residents, emergency room nurses, emergency room patient representatives, security officers, and others. Preliminary analyses identified a number of baseline factors related to treatment adherence.

North Carolina EMSC Project: A Model System for Statewide Plan Development

Grantee
University of North Carolina at Chapel Hill

Project Number MCJ-374001

Project Period 10/01/90–09/30/94

State North Carolina

Pediatric emergency care (PEC) courses were developed and taught by project staff. An EMS training manual for pediatric intraosseouss infusions was developed and distributed across the State and Nation. The project also actively supported a number of pediatric emergency and acute care training programs.

Emergency Medical Services for Children

Grantee
Ohio Department of Health

Project Number MCJ-394001

Project Period 10/01/90–12/31/94

State Ohio

This project focused on building local support and developing effective local emergency medical services systems with linkage to referral centers. In the Appalachian southeastern county cluster, emergency medical technicians were trained as community educators in injury control, first aid, and proper use of the EMS system. In the Appalachian southwestern county cluster, the Area Health Education Center undertook a community planning effort. The community developed a project involving an unintentional injury prevention program targeting transportation injuries. In the northwestern county cluster, an area that includes many farms, a project emphasized farm safety and the strengthening of the linkage between the EMS agencies, Ohio Agricultural Extension office, and hospitals in the region. In the northeast county cluster, a project was undertaken with the Amish population, an agrarian cultural minority in Ohio. In addition, a Tri-State EMSC Alliance of Ohio, West Virginia, and Kentucky was developed to address regional EMSC needs and to establish resources for rural communities.

Developing and Improving the Capacity of Existing Pediatric Emergency Medical Services in Oklahoma

Grantee
University of Oklahoma

Project Number MCJ-404001
Project Period 10/01/91–12/31/94
State Oklahoma

Developing and improving the capacity of existing pediatric emergency services was the focus of this project. Accomplishments include the modification of the U.S. Department of Transportation's *EMT—A National Standard Curriculum* (December 1992); *Pediatric Minimum Ambulance Equipment List* (December 1992); and the videotape *When Your Baby Cries* (March 1993).

Emergency Medical Services for Children in Oregon

Grantee
Oregon State Health Division

Project Number MCH-414001
Project Period 02/01/86–05/31/89
State Oregon

This project was funded to develop a regionalized, comprehensive system to provide emergency medical services for children in the State. A methodology was developed for developing and refining criteria for levels of pediatric critical care on a statewide basis. Criteria that have been demonstrated to be appropriate for respiratory failure and head injury were developed for three levels of pediatric critical care facilities. In addition, the project produced materials for EMS field providers to educate communities about when and how to access the EMS system for ill and injured children; a paramedic pediatric curriculum; videotapes for rural physicians on management of head injury; a modular curriculum to train lay child care providers who provide respite care; and a rehabilitation evaluation protocol for pediatric patients discharged from acute care facilities.

Texas Emergency Medical Services for Children

Grantee
Texas Department of Health

Project Number MCJ-484001

Project Period 10/01/91–09/30/94

State Texas

One of the major foci of this program was to train EMS personnel, nurses, and physicians—particularly those in rural areas. More than 700 people participated in the prehospital provider pediatric course. Another major focus was data collection and analysis: 50,000 individual patient records from EMS providers were analyzed for injury and illness patterns to assist providers in better understanding the types of injury and illness that require emergency care. In addition, the program developed and disseminated a poison education kit and a resource book of ongoing injury prevention activities among EMS providers.

Emergency Medical Services for Children

Grantee
Utah Department of Health

Project Number MCJ-494001

Project Period 10/01/90–09/30/94

State Utah

A comprehensive intermountain EMSC data surveillance system was established throughout the five-State region to provide accurate data about childhood illnesses and injuries. Existing intermountain regional air transport systems were integrated by educating emergency care providers about the capability, availability, and response times of existing air transport systems. Regional protocols and educational programs for EMS systems were established throughout the five-State region. *Two Worlds: A Calendar and Health Guide for Parents*, was developed to improve the knowledge of Native American parents and caregivers about home-based child health interventions.

Emergency Medical Services for Children Project

Grantee
Vermont Department of Health

Project Number MCH-504001

Project Period 10/01/89–09/30/92

State Vermont

The Vermont EMSC Project was geared at increasing the capacity of the Vermont EMS system to deliver pediatric emergency care. A pediatric emergency registry was implemented along with a standardized run report system. Prehospital provider training courses were conducted throughout the State and PALS training for physicians, nurses, and paramedics was expanded. An interactive videodisc on pediatric trauma was developed in conjunction with the Idaho EMSC Program and statewide (and neighboring State) implementation of the *Mediquiz* and *Pediatric Respiratory Emergencies* interactive videodiscs was completed. The project also continued to support the involvement of prehospital providers in locally based injury prevention programs and the Vermont Child Safety Coalition's ongoing efforts to plan for long-term EMSC goals.

Emergency Medical Services for Children

Grantee
Washington Department of EMSC Health

Project Number MCH-534001

Project Period 10/01/87–09/30/91

State Washington

The project provided training to 25 percent of prehospital care providers in the State and established an ongoing system for training. A system was developed to designate certain hospitals as pediatric emergency and critical care centers. A pediatric data base was also developed and pediatric data, collected on existing EMS forms, were linked with mortality data and hospital discharge summary data. The data base was used to monitor pediatric EMS care in the State and identify regions, diseases, or other factors with poor outcome; provide the basis for conducting research into pediatric EMS care in the State, and allow for more indepth epidemiologic studies; and evaluate the success of the pediatric EMS interventions implemented under this grant. To assess underutilization of EMS by minority groups and to identify specific barriers, a survey was conducted on use of EMS by Native Americans, migrant workers, and Southeast Asian refugees. To facilitate patient followup after discharge, a pilot project to establish a referral system between the hospital and local public health nurses was conducted.

Improving Emergency Services for Children in Wisconsin

Grantee
Wisconsin Department of Health and Social Services

Project Number MCH-554001

Project Period 10/01/87–09/30/91

State Wisconsin

Goals of the project were to: (1) Establish a mechanism that focused the attention of the emergency medical services system and the general public on the need for improved EMS response to the acutely ill or injured child and his or her family, and on the steps necessary to develop this improved response; (2) identify and describe the incidence, types, causes, prehospital and hospital treatments, and outcomes of pediatric emergencies; (3) provide information, education, and training to parents, prehospital EMS personnel, and hospital staffs; (4) develop specialized programs to improve EMSC in the State's Native American and farm populations; (5) develop specialized programs to assess the need for and the resources required to provide counseling and psychological support services to parents and emergency services personnel in the aftermath of severe pediatric illness or injury; and (6) develop a comprehensive plan for statewide improvement of the EMS provided to the pediatric population.

Wyoming EMSC Project: System Enhancement

Grantee
Wyoming State Health Department

Project Number MCJ-564001

Project Period 10/01/94–09/30/95

State Wyoming

During this 1-year project, the Wyoming Office of Emergency Medical Services (EMS) studied issues related to emergency medical services for children (EMSC) in Wyoming and produced a State plan for EMSC. This project strived to: Develop a comprehensive plan for the delivery of EMSC; develop and implement a data and surveillance system to obtain accurate data and information on which to base long-term decisions regarding EMS in Wyoming; and reduce morbidity and mortality among Wyoming's children. A statewide task force of professionals was appointed to study the issues of EMSC in Wyoming.

Appendix

Active and Completed EMSC Projects

Projects to Support EMS Improvements

Joint Projects with the National Highway Traffic Safety Administration

Emergency Medical Technician-Intermediate and Emergency Medical Technician-Paramedic: National Standard Curricula and Associated Refresher Courses Revisions
DTNH22-95-C-05108 3

Workshop on Children's Emergencies in Disasters
OWF 53293 4

Development and Implementation of National Consensus on Emergency Medical Services Communications: Problems and Remedies
DTNH22-94-G-05222 5

Model Quality Improvement Program for Emergency Medical Services Systems
DTNH22-75-C-05107 6

Emergency Medical Services Agenda for the Future
DTNH22-95-G05188 7

First Responder Training Program Revision
DTNH22-94-R-05123 8

Role of Out-of-Hospital Emergency Medical Services in Primary Injury Prevention
95H03381A0000000 9

Emergency Medical Services Instructor Training Program: National Standard Curriculum
DTNH22-94-C-05008 10

Contracts

An Analysis of Potential Economies of Scale in Poison Control Centers: Phase I
240-95-0100 13

Evaluating the Effect of Federal Demonstration Funds on State Emergency Medical Services for Children
282-92-0040 15

Fire Fighter Training in the Emergency Medical Care of Children
103HR950893P000-000 16

Government Financial Options to Preserve and Expand Poison Control Centers
103HR940813P000-000 17

The EMSC Resource Network

National EMSC Resource Alliance (NERA) (CA)
MCU-064005 21

EMSC National Resource Center (NRC) (DC)
MCU-114002 23

National Emergency Medical Services for Children Data Analysis Resource Center (NEDARC) (UT)
MCH-494003 25

State System Development Grants

Planning Grants

Emergency Medical Services for Children Planning Grant (MP)
MCH-694001 33

Emergency Medical Services for Children (CT)
MCH-094001 35

Emergency Medical Services for Children (IA)
MCH-194001 37

Grant Proposal to Develop a Plan to Improve EMSC in Puerto Rico (PR)
MCH-434001 38

Implementation Grants

GEMS-C: Georgia Emergency Medical Services for Children (GA)
MCH-134001 41

Illinois Emergency Medical Services for Children Implementation Plan (IL)
MCH-174001 43

Improving Emergency Medical Services for Children in Massachusetts (MA)
MCH-254001 45

Addressing the Emergency Medical Needs of Children in Minnesota (MN)
MCH 274001 47

A Montana EMSC Data, Injury Prevention, and Training Program (MT)
MCH-304001 50

Emergency Medical Services for Children in Pennsylvania (PA)
MCH-424001 52

Rhode Island Emergency Medical Services for Children Program (RI)
MCH-444001 55

Regionalization of Care for Pediatric Patients (SC)
MCH-454001 58

Emergency Medical Services for Children (SD)
MCH-464001 61

Tennessee EMSC State Systems Implementation Grant (TN)
MCH-474001 63

Tri-State Appalachian Alliance for EMSC (WV)
MCH-544001 65

Wyoming EMS-C Project: Implementation Phase
MCH-564001 67

System Enhancement Grants

Emergency Medical Services for Children Targeted Injury Prevention (AK)
MCH-024002 71

Arizona EMSC Enhancement Project (AZ)
MCH-044002 73

Emergency Medical Services for Children System Enhancements (HI)
MCH-154002 75

Maryland System Enhancement for EMSC Programs (MD)
MCH-244002 77

Michigan's Pediatric Emergency Development System (M-PEDS) (MI)
MCH-264002 80

Southwestern Illinois-St. Louis (SISL) Bistate Regional EMSC Project (MO)
MCH-294003 83

Nevada EMSC State System Enhancement Grant (NV)
MCH-324002 85

New Hampshire Emergency Medical Services for Children Enhancement (NH)
MCH-334002 88

North Carolina Emergency Medical Services for Children Enhancement Project (NC)
MCH-374002 91

Enhancement of the State of Ohio Emergency Medical Services for Children System (OH)
MCH-394002 93

Enhancing Oklahoma's Emergency Medical System to Care for Pediatric Patients (OK)
MCH-404002 95

Texas Emergency Medical Services for Children Enhancement Project (TX)
MCH-484002 98

Vermont Emergency Medical Services for Children System Enhancement Project (VT)
MCH-504002 100

Emergency Medical Services for Children (EMSC) Enhancement Grant for Poison Prevention (WI)
MCH-554002 102

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Outcome Evaluation of Emergency Medical Services for Children (AR)
MCH-054002 107

Evaluation of California Emergency Medical Services for Children Model (CA)
MCH-064005 109

School Nurse Emergency Medical Services for Children (CT)
MCH-094002 111

Effective Communication and Cultural Competence in Emergency Care of the Adolescent: A Curriculum for Emergency Medical Service Providers (DC)
MCH-114003 114

Program Against Violent Events (PAVE) (IL)
MCH-174002 116

Methodology for Evaluation and Reduction of Pain and Distress in Pediatric Emergencies (MO)
MCH-294002 118

Psychological First Aid for Children Who Witness Violence (MO)
MCH-294004 120

EMS Personnel as Community Injury Prevention Advocates (NM)
MCH-354002 122

New York City EMSC-Pediatric Teaching Resource (NY)
MCH-364004 125

Child Care Health and Safety Training and Network Development (OK)
MCH-404003 128

EMSC Data Enhancement Project (PA)
MCH-424002 130

Emergency Medical Services for Children: A Model for Knowledge Transfer and Utilization to the Yet Uncommitted (TX)
MCH-484003 133

Improving Primary Care Physician Education and Involvement in Emergency Medical Services (TX)
MCH-484004 135

Statewide Drowning Prevention (WA)
MCH-534002 137

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Quality and Cost Containment in Pediatric Intensive Care (AR)
R01-HSO9055 143

Prehospital Pediatric Intubation and Patient Outcome (CA)
R01-HSO9065 145

Pediatric Prehospital Critical Care Skills Retention (OR)
MCJ-410649 147

Applying Biomechanical Epidemiology to Injury Prediction (PA)
R01-HSO9058 148

Cost Effective Emergency Department Screening for UTI in Febrile Children (PA)
MCJ-420648 150

Epidemiology and Cost of Emergency Medical Services Provided to Children (UT)
R01-HSO9057 152

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Intermountain Regional EMSC Coordinating Council Continuing Education Conference (UT)
MCT-499403 155

Completed Projects

Demonstration Projects for Pediatric EMS Systems Components (AL)
MCH-014001 161

Alaska EMS for Children (AK)
MCH-024001 161

Arizona Emergency Medical Services for Children (AZ)
MCH-044001 162

Demonstration Project: Emergency Medical Services for Children (AR)
MCH-054001 162

A Prospective Randomized Study of the Effect of Prehospital Pediatric Intubation on Outcome (CA)
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Emergency Medical Services for Children (CA)
MCJ-064002 163

Emergency Medical Services for Children in Rural and Urban Settings (CA)
MCH-064001 164

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Emergency Medical Services for Children (HI)
MCH-154001 167

Idaho Emergency Medical Services for Children (ID)
MCH-164001 168

Pediatric Medical Emergencies Interactive Videodisc Program (ID)
MCJ-164002 168

Illinois Emergency Medical Services for Children Needs Assessment Survey (IL)
MCH-174001 169

The Midwest Regional Childhood Injury Prevention and Control Conference (KS)
MCT-209411 169

Emergency Services for Children in Louisiana (LA)
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